

LUST

FAC: 8LT 584

DATE: 1992-2002

482 T18

6006-6PP1

CR APR 2002

EPOCH

ENVIRONMENTAL
GROUP

March 15, 2002

Mr. Verne Schiraldi
Iowa Department of Natural Resources
Cracking Underground Storage Tank Section
Wallace State Office Building
Des Moines, IA 50319

Re: ISO ACTION REQUIRED
MARLEY PUMP COMPANY
South 89th STREET, DAVENPORT, IOWA
[REDACTED] & 9LTB63
REG. NO. 7910559 & 9217486

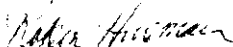
Dear Mr. Schiraldi:

EPOCH Environmental Group and SPX Corporation received the IDNR letter dated March 22, 2001 that accepted the Iso Action Required classification of the referenced Marley Pump facility. The purpose of this letter is to notify the IDNR EUST Section that monitoring wells located at the facility will not be abandoned immediately.

The monitoring wells will be utilized for assessment of a TCE release regulated under the IDNR Contaminated Sites Section. Upon closure of the TCE project, the monitoring wells will be abandoned and we will provide the well abandonment records and documentation to both the EUST and Contaminated Sites Sections for closure.

If you have any questions, please contact EPOCH at (563) 355-9785.

Sincerely,
EPOCH Environmental Group LLC


Robin Husman
Mid-Continent Operations Manager

Cc: Dan McGrade, SPX Corporation



RECORD COPY

CR APR 2002

File Name _____

Senders Initials _____

STATE OF IOWA

THOMAS J. VILSACK, GOVERNOR
SALLY J. PEDERSON, LT. GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
JEFFREY R. VONK, DIRECTOR

March 22, 2002

CERTIFIED MAIL

Dan McGrade
SPX Corporation
700 Terrace Point Drive
P.O. Box 3301
Muskegon, MI 49443-3301

700000580442903

SUBJECT Tier 2 SCR Review - Marley Pump Company
500 E. 59th Street in Davenport, Iowa
Tank Registration Nos. 7910059 & 9217486 [REDACTED] Nos. [REDACTED] & 9LTB63

Dear Mr. McGrade:

The Department of Natural Resources received the *REVISED* Tier 2 SCR for the referenced sites. Thank you for the submittal. We have conducted a *completeness* review of the report as described in subrule 567-135.10(11) of the Iowa Administrative Code. Based on our review, deficiencies listed in the August 17, 2001, IDNR letter rejecting the original Tier 2 SCR have generally been addressed. The following deficiency, numbered as in the August 17, 2001 IDNR letter, has not been adequately addressed:

- 12 **Inadequate.** Laboratory Data Sheets were not provided for the following groundwater samples: MW-5, MW-6, MW-7 collected on 3/29/99; MW-3-95 collected 10/27/99; MW-2, MW-1, MW-3, MW-4, MW-1-95, MW-3-95, MW-4-95, MW-5-95, MW-6-95, and MW-7-95 collected 12/10/98

Considering the most recent Tier 2 SCR submission, such is considered to be complete if it contains all the information and data required by the department's administrative rules and guidance regarding Tier 2 evaluations and reporting. We have the following comments:

1. The groundwater Source Tier 2 Receptor Summary table listed the protected groundwater source (PGWS) receptor as 'L' - low risk. This designation of low risk is questioned since the site is not a protected groundwater source ($K = 0.1859$ m/day) (see p. 4). It appears the question "Include Preliminary Pathway results in analysis" was answered "no" in the Tier 2 software - Groundwater Source Pathway Evaluation section. The question should have been answered "yes" (refer to page 58 of the Iowa RBCA Tier 2 - SMR Software for Windows User's Manual, Version 2.30) (output would have been 'N').
2. The current risk was not listed for actual and potential receptors on the Groundwater Source and Soil Leaching Tier 2 Receptor Summary tables (output would/should have been 'N').

3. Soil Boring Logs/Monitoring Well Diagrams were not provided for MW-10, B-11, and B-12. The department acknowledges the field screening results were provided in the Field Screening Results table. However, the Soil Boring Logs/Monitoring Well Diagrams for MW-10, B-11, B-12 should have been provided.
4. A Field Screening Map was not provided.

The following additional problems also do NOT require correction, but are identified below for the attention and benefit of your consultant.

1. Concerning item #2 of the 8/17/01 IDNR letter: **Incomplete:** The Groundwater Analytical Data table is inaccurate, contrary to the 2/18/02 cover letter. The benzene, toluene, ethylbenzene, xylenes (BTEX) data for groundwater sample MW-1 (10/20/93) was entered incorrectly in the table, and the sampling date for MW-1 (5/3/95) was entered incorrectly as 6/3/95. The department acknowledges revising the data table will not affect the groundwater maximums and contaminant plumes.
2. Concerning item #3 of the 8/17/01 IDNR letter: **Incomplete:** The parameters listed in the Site Hydrogeology section (p. 5) do not correspond to the Soil and Groundwater Source Dimension Plume Maps (see Attachments 18 and 19), and page 5 also doesn't correspond to the Tier 2 software.
3. Concerning item #4 of the 8/17/01 IDNR letter: **Incomplete:** The department acknowledges the range of plume flow of 30% was used in the Tier 2 software. However, page 5 of the Tier 2 report does not correspond to the Tier 2 software.
4. The City of Davenport should have been contacted for the benchmark elevation (refer to page 13 of the revised Tier 2 report).

However, the department is accepting a "No Action Required" site classification. No additional action is required at this time. We will update our records to show the change in status.

A no further action certificate for this site may be obtained by submitting to the department the following:

- An accurate and complete legal description of the site, as found in the deed or mortgage. NOTE: A legal description obtained from a tax form is **not** acceptable.
- Completed Abandoned Water Well Plugging Records (DNR Form 542-1226) for the wells and soil borings that accessed groundwater at the site. Please be aware the recipient of the no further action certificate is responsible for insuring all wells and borings that accessed groundwater are abandoned and plugged according to Chapter 567-39, Iowa Administrative Code (IAC). Contact the designated county agent prior to plugging the abandoned wells and borings. Questions pertaining specifically to the procedures to be followed for plugging wells and borings should be directed to the Water Supply Section at 515-725-0268 or the designated county agent. You may retain wells at the site for future use. In a letter please identify the wells to be retained, the reason for retaining the wells and written plan for well maintenance and security.

The legal description and Abandoned Water Well Plugging Records should be sent to LUST Coordinator at the Underground Storage Tank Section, Department of Natural Resources, Wallace State Office Building, 502 East Ninth Street, Des Moines, IA 50319-0034.

In all correspondence regarding this project, please include the LUST number, which is indicated in the subject heading of this letter. If you have questions or we may be of assistance, please contact me at 515-783-6204.

Subgroups



Fields of Opportunities

THOMAS J. VILSACK, GOVERNOR
SALLY J. PEDERSEN, LT. GOVERNOR

STATE OF IOWA

DEPARTMENT OF NATURAL RESOURCES
JEFFREY R. WINK, DIRECTOR

January 15, 2002

CERTIFIED MAIL

Mr. VanZuden
Marlex Pump Company
500 East 59th
Davenport, IA 52807

RE: FTS# NOTICE: Marlex Pump Company at 500 East 59th in Davenport, Iowa
Tank Registration No. 7910056 LUST No. ~~9217486~~
Tank Registration No. 9217486 LUST No. 9LTB63

Dear Mr. VanZuden:

The department sent a notice dated August 17, 2001, requiring completion of revisions to the Tier 2 Site Cleanup Report. The department has not received the report and it continues to be overdue.

This letter is final notice that unless the report is submitted no later than ten days after receipt of this letter, an administrative order may be issued requiring compliance.

Failure to meet this compliance deadline may result in the assessment of administrative penalties. The department has the authority to assess administrative penalties of up to \$10,000 for these types of violations.

In all correspondence regarding this project, include the LUST number, which is indicated in the Subject heading of this letter. If you have questions please contact the undersigned by telephoning 515/281-8135.

Sincerely,



JAMES H. WESTON

SUPERVISOR

UNDERGROUND STORAGE TANK SECTION

DNTR 090-00-801584

cc: Field Office 6
GAB Robins

R. Jonathan Paetz, Dahl & Associates, Inc., 985 Lincoln Road, Suite 220,
Bertendorf, IA 52722-4156



THOMAS J. VILSACK, GOVERNOR
SALLY J. PEDERSON, LT. GOVERNOR

File Name: _____

Senders Initials: _____

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CR SEP 2007

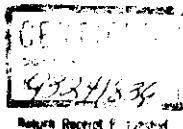
STATE OF IOWA

DEPARTMENT OF NATURAL RESOURCES
JEFFREY R. VONK, DIRECTOR

August 17, 2007

CERTIFIED MAIL

Mr. Richard Nelson
Marley Pump Company
500 E. 59th Street
Davenport, IA 52808



SUBJECT: Tier 2 Completeness Review - Marley Pump Company
500 E. 59th Street, Davenport, Iowa
Registration No.'s: 9217486 & 7910059
LIST No.'s: 9LTB63 & ~~9LTB64~~ (7)

Dear Mr. Nelson:

The Department of Natural Resources (DNR) has received a Tier 2 Site Cleanup Report for the referenced site. Thank you for the submittal. We have conducted a completeness review of the report as described in subrule 567-135.10(1) of the Iowa Administrative Code. A Tier 2 SCR is considered to be complete if it contains all the information and data required by the department's administrative rules and guidance regarding Tier 2 evaluations and reporting. Based on our review, the referenced report is incomplete and unacceptable because:

1. The soil source investigation and location is questioned. The department "reluctantly accepted" the pre-RBCA SCR for 9LTB63 (4/18/96 IDNR letter). In the 4/18/96 department letter, the department noted "no soil samples were obtained from MW-4-95 to MW-7-95". The vertical extent of contamination in MW-4-95 was not investigated adequately, and "PID readings were not recorded due to instrument malfunction" for MW-5-95 (refer to 9LTB63 pre-RBCA SCR). Note, MW-5-95 is the groundwater source. The department acknowledges the PID readings were non-detect for MW-6-95 and MW-7-95. Please conduct field screening and soil sampling according to Tier 1 Guidance at MW-4-95 and MW-5-95.
2. The Groundwater Analytical Data table is inaccurate and incomplete. Free product was first observed in MW-2 on 3/27/95. However, groundwater samples were not collected at that time (see 4/13/1595 Being Consultants Progress Report #1). Therefore, free product defaults should be applied (see Tier 2 Guidance, p. 81). The benzene, toluene, ethylbenzene, xylenes (BTEX) data for groundwater sample MW-1 (10/20/93) were entered incorrectly in the table, and the sampling date for MW-1 (5/3/95) was incorrectly entered as 6/3/95. Please revise the data table accordingly.
3. The groundwater and soil source width (Sw) and length (W) parameters are not maximum and are questioned. The parameters listed in the Site Hydrogeology section (p. 5) do not correspond to the Soil and Groundwater Source Dimension Plume Maps (see Attachments 18 and 19). Also, the Soil Source Dimension plume is not closed. The interpolation range is inadequate. Please use the maximum Sw and W values. Revise all affected Tier 2 sections.

4. Examining the groundwater flow maps in the Tier 2 evaluation and pre-RBCA SCR indicates the current range of plume flow (0', p. 5) is inadequate. The groundwater flow direction has historically been both to the southwest and southeast (see 9LTB63 pre-RBCA SCR and 8LTS84 pre-RBCA SCR). The range of plume flow should be sufficient to account for the greater of the current lateral extent of the measured groundwater contamination plume or the historically observed variation in groundwater flow direction (Tier 2 Guidance, p. 20). Please revise accordingly. Revise all affected Tier 2 sections.
5. The hydraulic conductivity values are questioned. The department acknowledges the inability to print graphs. However, the data provided is not labeled. The units are not provided for each column and the weighting assigned to each data point was not shown. Please provide the necessary information.
6. The Groundwater well survey is questioned. The pre-RBCA SCR (for both 8LTS84 and 9LTB63) indicated "3 deep wells exist on-site". However, only one of the 3 wells was discussed in the Groundwater Well Receptor Survey section (p. 14). Note, "a non-drinking water well is any groundwater well not defined as a drinking water well including an abandoned groundwater well which is not properly plugged" (Tier 2 Guidance, p. 82). Please include all 3 wells in the receptor survey or provide adequate justification and documentation (i.e., abandoned well plugging records) for not including all 3 wells in the receptor survey. Also, the dates when the Iowa Geological Survey Bureau and the Scott County Health Department were contacted for well survey information were not provided. Please submit the necessary information.
7. The Commingled Plume Discussion incorrectly stated "there was a previous release at this site that had received closure in 1994" (p. 16). UST No. 8LTS84 did not receive "closure" in 1994. The pre-RBCA Review SCR for 8LTS84 was not accepted (see 3/30/94 IDNR letter). Please revise the Commingled Plume Discussion.
8. The Free Product report section is incomplete (p. 16). The date of the last free product report submittal and the status of free product recovery were not provided. Please complete the discussion.
9. The Groundwater Benzene Contaminant plume is not closed to the northwest. The interpolation range is inadequate. Please revise.
10. The groundwater elevations for MW-8 and MW-9 should not have been evaluated in constructing the Groundwater Flow Direction Map since they were measured one month later than the majority of the monitoring wells. Please revise accordingly.
11. The Well Survey Map does not show the location of the 3 on-site wells (refer to deficiency #1). Please revise.
12. Laboratory Data Sheets were not provided for groundwater samples collected 3/29/99 and for groundwater samples collected 2/10/98 and 10/27/99 from MW-2-95. Please submit.
13. The Soil Boring Logs/Monitoring Well Construction Diagrams were not provided for MW-5, MW-6, and MW-7. Please submit. Note: a slug test was performed in MW-6.
14. A Site Plan Map was not provided. Please submit a site plan map, ensuring that the locations of all former USTs, current USTs, product lines and dispensers are shown. Also, identify the location of the 1995 spill associated with the broken vinyl tube (see 4/4/95 letter from R. K. Nelson, Marley Pump Company).

The department can not accept the Tier 2 report at this time based on the above deficiencies. You are required to complete the following:

Within 90 calendar days submit a revised Tier 2 report. Note this completeness review does not address accuracy. Accuracy problems, if present in this report, may prevent its acceptance when this site is proposed for a no action required classification. Also be aware the outlined deficiencies in the Tier 2 report must be fully addressed in conjunction with a Tier 2 re-submittal. Incomplete Tier 1 Reports and Tier 2 Reports not submitted in the format required by the department will be rejected.

Attach a cover letter to the revised Tier 2 report. In the cover letter provide a brief description how each of the listed deficiencies has been addressed in the revised report. With each response provide a reference identifying where revisions are located in the revised report. List and number your responses in the same order as the deficiencies. If a deficiency can be completely addressed solely with a brief, concise statement in the cover letter, rather than by inclusion of a revised page or section in the report, you may do so.

If a letter is submitted instead of a Tier 2 revision, a new Tier 2 report cover page, signed by you and your Certified Groundwater Professional, must be included with the letter.

If you are unable to meet the above schedule, notify the department in writing as soon as possible. Provide a detailed reason for the delay and a firm date by which the report will be submitted.

Annual monitoring intended to measure changes in contaminant levels and contaminant migration is required during the third calendar quarter until the corrective action for the site is implemented. DNR rules require you to retain a certified groundwater professional to conduct all site monitoring activities. A Site Monitoring Report (SMR) must be submitted to the DNR within 30 days after each sampling event. The next SMR must be submitted by October 30, 2002.

In all correspondence regarding this project, please include the LUST number, which is indicated in the Subject heading of this letter. If you have questions or we may be of assistance, please contact me at 515-281-6704.

Sincerely,

Vern Schunk

VERNE SCHUNK
ENVIRONMENTAL SPECIALIST
UNDERGROUND STORAGE TANK SECTION

8584R986312rej.doc

cc: Field Office 6
GAB Business Services, Inc.
R. Jonathan Paetz, Dahl & Associates, Inc., 985 Lincoln Road, Suite 270, Bettendorf, IA 52722

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach the card to the back of the mailpiece, or on the front if space permits. *USPA*

1. Article Addressed to:

MR RICHARD NELSON
MARLEY TUMP COMPANY
500 EAST 39TH STREET
DAVENPORT IA 52008

A. Received by (Please Print Clearly)

5. Date of Delivery

C. Signature

X. R. Nelson

☐ Agent

☐ Addressee

D. Is delivery address different from item 1?

☐ Yes

If YES, enter delivery address below

☐ No

3. Service Type

☒ Certified Mail

☐ Express Mail

☐ Registered

☐ Return Receipt for Merchandise

☐ Insured Mail

☐ C.O.D.

4. Restricted Delivery? (Extra Fee)

☐ Yes

2. Article Number (Copy from service label)

PS Form 3811, July 1996

Domestic Return Receipt

10-590-20-1-8800

709932220000293241836

DAHL
& Associates, Inc.

Environmental Consultants, Contractors & Engineers

May 30, 2000

Mr. Verne Schrunk ✓
Iowa Department of Natural Resources
Underground Storage Tank Section
Wallace State Office building
906 East Grand Avenue
Des Moines, Iowa 50319-0034

RE: Tier 2 Report for the Marley Pump, Davenport, Iowa.

DAHL Project No. 1695 1539

Registration No: 9217486

IUST No. 9LTB63

Registration No: 7910056

~~1000-10-0000~~

Dear Mr. Schrunk:

Dahl & Associates, Inc. (DAHL), on behalf of Marley Pump is working on the Tier 2 Site Cleanup Report (Tier 2) for the subject site. DAHL is writing a combined Tier 2 for the two IUST sites. The Tier 2 will be completed and submitted to the IDNR by June 30, 2000.

DAHL is installing a boring near MW-2, where free product had been observed after the 9LTB63 release. The two releases were within 50' and both utilize the same set of monitoring wells for plume definition.

If you have any questions regarding this submittal, please feel free to contact this office at (319) 355-9785. Thank you.

Sincerely,

DAHL & ASSOCIATES INC.

R. Jonathan Paetz
R. Jonathan Paetz
Project Director - Senior Scientist
Iowa Groundwater Professional #1435

Kari Davidson
Kari Davidson
Marley Pump Company

RJP:ss

cc: Neil Searcy, GAB Robins, Inc



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CN JUN 2000

File Name _____

Senders Initials _____

DEPARTMENT OF NATURAL RESOURCES

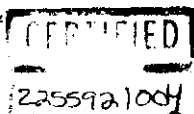
THOMAS J. VILSACK, GOVERNOR
SALLY J. PEDERSON, LT. GOVERNOR

LYLE W. ASELL, INTERIM DIRECTOR

May 25, 2000

Mr. Dan VanZuden
Marley Pump Company
500 East 49th
Davenport, IA 52807

CERTIFIED MAIL

SUBJECT Overdue Tier 1 Report - Marley Pump Company at 500 East 59th in Davenport, Iowa
Tank Registration No. 7910056 LUST [REDACTED]

Dear Mr. VanZuden:

The Iowa Department of Natural Resources was informed on April 7, 1992, of contamination at the above-referenced facility. The department requested under Chapter 135.8 of the Iowa Administrative Code, through a certified letter dated June 22, 1999, a Tier 1 Report be prepared and submitted.

The report has not been received and is overdue. The department is requiring the report be submitted within ten days from receipt of this letter. Failure to respond to this request may result in a recommendation that this project be referred to our Compliance and Enforcement Bureau for further action. Referral may result in assessment of an administrative penalty.

Funding for the activities described above may be available to assist you. If you have questions concerning eligibility for funding, please contact GAB Robins at 515/276-8046 and ask for Neil Searey at ext. 237 or Sandy Porter at ext. 240. Please be aware the funding assistance for these site evaluations expires June 30, 2000. It is very important you receive assurances from the certified groundwater professional you select that the site evaluation will be completed prior to June 30, 2000 (e.g., contract signed by the consultant specifying the date the report will be submitted to DNR).

In all correspondence regarding this project, include the LUST number, which is indicated in the Subject heading of this letter. If you have questions please contact the undersigned by telephoning 515/281-8135.

Sincerely,

JAMES H. WESTON
SUPERVISOR
UNDERGROUND STORAGE TANK SECTION

Attachments Certified Groundwater Professional list

JRH/sd/81.TS84

cc Field Office 6
GAB Robins

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
 ■ Print your name and address on the reverse so that we can return the card to you.
 ■ Attach this card to the back of the mailpiece, or on the front if space permits. *34/146*

1. Article Addressed to:

MR DAVE VANZUIDEN
 MARLEY PUMP COMPANY
 500 EAST 59TH
 DAVENPORT IA 52807

2. Article Number (Copy from service label)

2255921004

PS Form 3811, July 1999

A. Received by (Please Print Clearly)

Keap

C. Signature

X *Paul Hansen*

B. Date of Delivery

8-1-00

☐ Agent
☐ Addressee

D. Is delivery address different from item 1?

If YES, enter delivery address below

☐ Yes
☒ No

3. Service Type

☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee)

☐ Yes

Domestic Return Receipt

5010-101-01-1-010



THOMAS J. VILSACK, GOVERNOR
SALLY J. PEDERSON, LT. GOVERNOR

File Name _____

Senders Initials _____

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DEPARTMENT OF NATURAL RESOURCES

PAUL W. JOHNSON, DIRECTOR

June 21, 1999

CERTIFIED MAIL

Mr. Daan VanZuiden
Marley Pump Company
500 East 59th
Davenport, IA 52807



SUBJECT: Petroleum Contamination- Marley Pump Company at 500 East 59th Street in
Davenport, Iowa
Registration No. 7910056 LUST No. 8LTS84

Dear Mr. VanZuiden,

The Iowa Department of Natural Resources (DNR) previously accepted a low risk classification for the referenced site and required annual monitoring be conducted. However, the DNR has adopted administrative rules which significantly changed the process in handling petroleum contaminated sites. The rules (567--Chapter 135) follow an approach called Risk-Based Corrective Action (RBCA) and require an evaluation of site data to determine the risk the contamination at the site poses to public health, safety and the environment. This is your opportunity to establish the target for obtaining a "No Action Required" classification for your site.

We request you retain a certified groundwater professional to conduct a RBCA evaluation of your site. A list of certified groundwater professionals is attached. The groundwater professional will submit either a Tier 1 Site Assessment Report or a Tier 2 Site Cleanup Report (Tier 2 SCR). In conducting the evaluation, the certified groundwater professional may use data from your previously submitted SCR or obtain current data by sampling the soil and groundwater. Please follow this activity schedule:

Within 30 calendar days after receipt of this letter, submit in writing the name of the certified groundwater professional you have retained for the RBCA evaluation project and your intent to follow the schedule contained in this letter. We strongly suggest selecting a certified groundwater professional who can commit to the schedule for report submittal.

Within 90 calendar days after receipt of this letter, submit the Tier 1 Report. Guidance for the report has been provided to certified groundwater professionals.

If you elect to prepare a Tier 2 SCR instead of a Tier 1 Report, the department must be notified in writing prior to the expiration of the Tier 1 Report submittal deadline. The Tier 2 SCR must be submitted within 180 calendar days after receipt of this letter. Your certified groundwater professional can assist you in determining whether a Tier 2 SCR is necessary. Contact the department (515/281-6019) if you want a copy of the guidance documents.

Upon receipt of the Tier 1 Report or the Tier 2 SCR, the department may either conduct a cursory review of the report for completeness, or conduct a more thorough review to determine whether the report is complete, accurate, and in compliance with the department's rules. A report is considered to be complete if it contains all the information and data required by the administrative rules and the department's

guidance. Incomplete Tier 1 Reports and Tier 1 Reports not submitted in the format required by the department will be rejected. The report is considered accurate if the information and data are reasonably reliable based first on the standards in the administrative rules and department guidance, and second, on generally accepted industry standards.

If the department does not send you a response within 60 days, the report will be considered accepted for the purposes of completeness. If the report proposes a no action required site classification, the 60-day review limitation does not apply. The department may conduct a thorough review of the report for completeness, accuracy and compliance with the department's rules to determine whether the data and information support the site classification.

SITE MONITORING

The new risk-based corrective action rules also require every site conduct at least annual interim monitoring until a no action required classification is approved by the department. The certified groundwater professional should select at least three wells to monitor, preferably during the third calendar quarter. The selected wells should include the source well(s) and monitoring wells between the source and significant receptors (such as water wells, plastic water lines, basements, etc.). A Site Monitoring Report (SMR) is to be submitted no later than 30 days after the end of the quarter in which the samples were collected. The next SMR is due by October 30, 1999.

FUNDING

Funding for the activities described above may be available to assist you. If you have questions concerning eligibility for funding, please contact GAB Robins at 515 / 276- 8046, ask for Neil Searcy at ext. 237 or Sandy Porter at ext. 240. Please be aware the funding assistance for these site evaluations expires June 30, 2000. It is very important you receive assurances (e.g., contract signed by the consultant specifying the date the report will be submitted to DNR) from the certified groundwater professional you select that the site evaluation will be completed prior to June 30, 2000.

In all correspondence regarding this project, include the LUST number, which is indicated in the Subject heading of this letter. If you have questions or if we may be of assistance, please contact me by telephoning 515 281-6704.

Sincerely,



VERNE SCHRUNK
ENVIRONMENTAL SPECIALIST
UNDERGROUND STORAGE TANK SECTION

Attachments: Certified Groundwater Professional List

VKS 3LTS&4jp

Field Office 6
GAB Robins

REMARKS:

1. Complete items 1 and/or 2 for additional services.
2. Complete items 3, 4a, and 4b.
3. Print your name and address on the reverse of this form so that we can return this card to you.
4. Attach this form to the front of the mailpiece, or on the back if space does not permit.
5. Attach "Return Receipt Requester" on the mailpiece below the article number.
6. The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

MR DAN VANZUIDEN
MARLEY PUMP COMPANY
500 EAST 59TH
DAVENPORT IA 52807

4a. Article Number

7 10/201253

4b. Service Type

- ☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery

6-26-79

5. Received By: (Print Name)

6. Signature: (Addressee or Agent)

X St. Angelo

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1964

Domestic Return Receipt

to your RETURN. A return receipt is not required for the return of the article.

Thank you for using Registered Mail.

847584

1942-1943

See also 9CT B3

- Y - Yes. Information provided meets the qualifications as indicated or presents the correct information.
- N - No.
- 1 - Information is inadequate
- 2 - Information is inaccurate
- 3 - Information is missing
- N/A - not applicable
- See also 9LT B-3*

FACILITY NAME/CITY _____

Date STC received

Date review initiated

Completed: 2-1-77

Reviewer (name):

Comment Letter date

HAS THE SITE CLEANUP REPORT (SCR) BEEN COMPLETED USING THE FORMAT PROVIDED OR A FORMAT DESIGNATED BY THE DEPARTMENT ?

YES

NO

RSV. 1/1994

GROUNDWATER
WATER, IN AIALS POWDERS
STEEPEST DOWNHILL
NO SAMPLES? PLANT GROWTH SOUTH

SITE CLEANUP REPORT CHECKLIST

Title Page : Are the following entries completed:

- | | | | | | |
|--------------------------------------|---|---|---|---|---|
| 1. LUST Number | Y | N | 1 | 2 | 3 |
| 2. UST Registration No. | Y | N | 1 | 2 | 3 |
| 3. Site Name | Y | N | 1 | 2 | 3 |
| 4. Site Address (complete) | Y | N | 1 | 2 | 3 |
| 5. Responsible Party - Name | Y | N | 1 | 2 | 3 |
| 6. Resp. Party - Address (complete) | Y | N | 1 | 2 | 3 |
| 7. Submittal Date | Y | N | 1 | 2 | 3 |
| 8. Site Risk Classification | Y | N | 1 | 2 | 3 |
| 9. Name / Sign. of Groundwater Prof. | Y | N | 1 | 2 | 3 |
| 10. Name / Sign. of Resp. Party | Y | N | 1 | 2 | 3 |

Appendices Check-off Sheet

Appendices Check-Off Sheet be completed?

Verify that all Appendices checked are in report.

Y N 1 2 3

I. Site History

Have the following been properly identified? (Verify thru UST database/written file)

- | | | | | | |
|---|---|---|---|---|---|
| A. Date of petroleum release discovery | Y | N | 1 | 2 | 3 |
| B. Date petroleum release reported to IDNR | Y | N | 1 | 2 | 3 |
| C. Site Owner Chronology - all information must be provided with no chronological gaps (the listing should include all periods of time when petro products were used or sold at the site) | Y | N | 1 | 2 | 3 |
| D. Description of circumstances of the discovery of release | Y | N | 1 | 2 | 3 |
| E. Description of initial actions taken to abate petroleum release | Y | N | 1 | 2 | 3 |

II. Current Site Conditions

Has sufficient information been provided on the following?

- | | | | | | |
|--|---|---|---|---|---|
| A. General description of site geology | Y | N | 1 | 2 | 3 |
| B. Description of all existing UST system(s) at site
- active and out of service. | Y | N | 1 | 2 | 3 |
| Are all USTs removed from the site. | Y | N | | | |
| C. Was a system tightness test (i.e., tank/line tightness test) required by the IDNR | Y | N | | | |
| If required: Using a copy of the latest tank/line tightness test, complete Table II-C | | | | | |
| - Appendix 1 - "Tank Line Tightness Testing Results" | | | | | |
| Is a complete copy of tank/line tightness test, including all supporting data provided? | Y | N | | | |
| Is the method used approved by the US EPA and/or the IDNR for the conditions and tanks located at the site? Was third party certification been provided? | Y | N | | | |
| Are the conclusions justified by data presented? | Y | N | | | |
| Are explanations of testing anomalies provided? | Y | N | 1 | 2 | 3 |
| If corrective actions were initiated or repairs necessary, is a description of actions provided? | Y | N | 1 | 2 | 3 |
| D. Topographic Site Map (Appendix 2) | | | | | |
| Is a legible topographical map, with contour interval less than or equal to 10 feet, provided showing the site and surrounding area? | Y | N | | | |
| E. Scaled Site Plan (Appendix 3) | | | | | |
| Is a scaled site plan provided showing the site and immediate surrounding area? | Y | N | 1 | 2 | 3 |
| Does the diagram provided show the location of all existing and removed USTs, product lines, and dispensers, and pertinent site features, such as roads, buildings, wells, waterways, sinkholes, etc.? | Y | N | 1 | 2 | 3 |

F. Scaled Site Vicinity Map

Are the names and addresses of all adjacent owners and owners whose property is or is likely to be affected by the movement of contamination provided? (Names provided must correspond to information on the "Scaled Site Vicinity Map")

Y N 1 2 3

Appendix 4 - "II(F) - Scaled Site Vicinity Map"

Is a completed scaled site map (1" = 200 to 500 ft) provided showing general area features and locations of adjacent properties which are or may be affected by contamination movement?

Y N 1 2 3

Does the map provided show all pertinent site features, including locations of buildings, roads, waterways, sinkholes, etc.?

Y N 1 2 3

III. Soil Sampling Methods & Findings

A. Boring number and placement - Has a reasoned explanation been given to justify the number and placement of soil borings.

Y N 1 2 3

Does the rationale for borehole placement allow for sufficient information to be collected to determine the vertical and horizontal extent of contamination and the transition zone(s) between areas that are and are not contaminated.

Y N 1 2 3

Is the rationale justified based on engineering, geologic, or hydrogeologic principles.

Y N 1 2 3

B. Soil Boring Logs (Appendix 5)

Note: Borings completed after March 5, 1992 must be logged on DNR Form 542-1392 or equivalent

Is a separate soil boring log provided for each borehole placed?

Y N 1 2 3

Are the boring logs completed with the information as required on DNR form 542-1392?

Y N 1 2 3

Is at least one (1) water level observation recorded with time, date and water elevation (ASL) for each boring log?

Y N 1 2 3

C. Prevention of cross-contamination: Are the actions taken sufficient to prevent cross-contamination between boreholes during installation and sampling procedures?

Y N 1 2 3

D. Vapor Equipment: Has a list been provided itemizing various vapor equipment used (if any), description of its use and an evaluation of the conclusions drawn from the vapor results and calibration procedures?

Y N 1 2 3

Calibration chart - Are daily calibration measurements noted for each vapor instrument used

Y N 1 2 3

E. Soil sample collection: Has a description been provided of soil sample collection methods and a reason for its use in obtaining representative samples.

Y N 1 2 3

At a minimum, were soil samples collected at 3 foot intervals or at points indicated by high vapor readings

Y N 1 2 3

F. Soil Contamination Plume Map(s) (Appendix G)

Do the soil contamination plume map(s) depict the full extent of vadose zone soils which exceed the IDNR corrective action limit of 100 ppm total organic hydrocarbons?

Y N 1 2 3

Are the maps adequately labelled with each boring numbered and soil contamination concentration for each boring noted?

Y N 1 2 3

Based on the location of soil borings and the boring logs provided, are the limits of contamination identified justified by scientific principles?

Y N 1 2 3

Have the borings used to determine hydraulic conductivity been identified?

Y N 1 2 3

IV. Groundwater Sampling Methods & Findings

- A. **Boxing number & placement:** Is a reasoned explanation given to justify the number and placement of groundwater monitoring wells?

Y N 1 2 3

Does the rationale for monitoring well placement allow for sufficient information to be collected to determine the vertical and horizontal extent of contamination, site stratigraphy, and the transition zone between areas that are and are not contaminated.

Y N 1 2 3

Is the rationale justified based on engineering, geologic, or hydrogeologic principles.

Y N 1 2 3

B. **Monitoring Well Construction Diagrams (Appendix 7)**

Note: Monitoring wells installed after March 5, 1992 must be logged/described using IDMN Form 542-1192.

Is there a separate monitoring well construction diagram completed for each well installed at the site and in the general area?

Y N 1 2 3

Do the monitoring well construction diagrams provide sufficient information regarding the construction of each well (See Section IV-C)?

Y N 1 2 3

Are water level observations recorded that verify a stabilized level? Has the well been allowed to stabilize?

Y N 1 2 3

Is the static water level indicated with the symbol "Y"?

Y N 1 2 3

Is the static water level within the screened interval of the monitoring well?

Y N 1 2 3

C. **Description of Permanent Monitoring Well Construction :**

Are the following aspects of the well construction provided in a clear and concise description?

- (1) method of cleaning well components prior to installation
- (2) casing and screen material, diameter and length
- (3) screen slot size
- (4) how sections of casings and screens are connected
- (5) method used to install filter pack and seals,
- (6) actions taken to prevent cross-contamination of wells during construction and sampling
- (7) procedures to develop monitoring wells

Y N 1 2 3

- D. Temporary Monitoring Wells: Has a description or explanation been provided describing the type and use of temporary casing and screens in the boreholes used as temporary wells?

Y N 1 2 3

Is an adequate explanation and justification provided on the procedures used to develop the well to ensure a representative groundwater sample?

Y N 1 2 3

- E. Groundwater Sampling Methods: Has an adequate explanation and justification been provided for determining the adequacy of the groundwater sampling and well purging methods?

Y N 1 2 3

- F. Groundwater Data for Contour Map Development:

Is a table provided which indicates, at minimum, the following information?

1. Well/Boring number
2. Date measured
3. Static Water Level (ASL) - nearest 0.01 ft
4. Water level correction for Free Product, if required
5. Ground Surface Elevation - nearest 0.1 ft

Y N 1 2 3

If the water level was corrected due to presence of free product, was a statement provided describing the correction method?

Y N 1 2 3

Has a description of the benchmark used to survey for groundwater surface elevations been provided?

Y N 1 2 3

Is the benchmark used tied in to a UFGS or other geodetic datum?

Y N 1 2 3

- G. Groundwater Contour Map (Appendix B)

Does the Groundwater Contour Map provide information as to monitoring well locations, groundwater elevation points, groundwater contour intervals, and groundwater flow direction (noted with an arrow)?

Y N 1 2 3

Are the wells used to determine hydraulic conductivity identified on the map?

Y N 1 2 3

If necessary, are separate groundwater contour maps provided to describe groundwater movement and flow direction in different aquifers?

Y N 1 2 3

H. Has a description and explanation been provided on:

- | | | | | | |
|--|---|---|---|---|---|
| 1. the methodology and device used to determine static groundwater levels - identify instrument used. | Y | N | 1 | 2 | 3 |
| 2. the accuracy of the method used to determine groundwater levels. | Y | N | 1 | 2 | 3 |
| 3. groundwater flows and/or anomalous water levels. | Y | N | 1 | 2 | 3 |
| 4. fluctuations in water levels, with special emphasis on those which may alter groundwater flow directions. | Y | N | 1 | 2 | 3 |

I. Groundwater Contamination Plume Maps (Appendix 9)

Do the groundwater contamination plume map(s) depict the full extent of free phase product and dissolved phase contamination exceeding the IDNR's groundwater corrective action limits and are the iso-concentrations of groundwater contaminants noted within the plume?

Y N 1 2 3

If necessary, is a separate groundwater contaminant plume map provided for each contaminant which exceeds the IDNR's corrective action limits?

Y N 1 2 3

Is each data point adequately labelled as to MW # and contaminant concentration?

Y N 1 2 3

If applicable, is a map provided which depicts the full extent of free product and depth of product?

Y N 1 2 3

Based on the number and location of data points/monitoring wells provided, are the diagramed limits of contamination justified?

Y N

Has the "transition zone" between adequately defined?

Y N 1 2 3

Y. Sampling Quality Control

Has a statement been provided that indicates that the QC/QA procedures used are at least as stringent as those of the IDNR's LUST QC/QA plan.

Y N

VI. Hydrogeologic Cross Section: (Appendix 10)

Are the Hydrogeologic Cross-Sections or three-dimensional diagrams stratigraphically correct as interpreted from the soil boring logs?

Y N 1 2 3

Do the cross-section diagrams provide detail of the following:

Identification of types and characteristics of the geologic materials present?

Y N 1 2 3

Identification of contact zones between different geological materials, noting areas of high permeability and/or fracture?

Y N 1 2 3

Location of boreholes, noting depth of termination and zone of saturation?

Y N 1 2 3

VII. Hydraulic Conductivity

A. Has the hydraulic conductivity been determined?

Y N 1 2 3

Has a statement been made identifying which boring(s) and/or wells were used to determine the hydraulic conductivity?

Y N 1 2 3

Have the data and calculations used to determine hydraulic conductivity been provided?

Y N 1 2 3

B. Has the method used to determine hydraulic conductivity been identified.

Y N 1 2 3

C. If an equivalent method (other than the Bouwer-Rice method in saturated soils or the Guelph permeameter in unsaturated soils) was used, was the accuracy and appropriateness evaluated?

Y N 1 2 3

D. Has an explanation been provided on why the location/number of data points used for determining hydraulic conductivity is representative of the conductivity at the site?

Y N 1 2 3

VIII. Remedial Survey (Appendix 11)

- A. Has a map been provided, with an appropriate scale to adequately show all surface water bodies within 1000 feet of the petroleum contaminated area? Y N
- Has the potential impact to the surface water been adequately investigated? Y N 1 2 3
- If water samples and/or soil samples have been collected, has a statement been provided on sample collection and analysis methods? Y N 1 2 3
- Has a narrative summary been provided to evaluate the potential for hydrogeological connections between the contamination and the surface water? Y N 1 2 3
- B. Has a map been provided, with an appropriate scale to adequately show all utility conduits within 200 feet of the petroleum contaminated area? Y N
- Has the potential impact to the conduits been adequately investigated? Y N 1 2 3
- Has a detailed statement of investigation procedures been provided, which should include identification of all soil and/or vapor sample locations? Y N 1 2 3
- Has a narrative summary been provided on the investigations conducted to determine if the vapors are present in confined spaces and/or in occupied structures? Y N 1 2 3
- Has a narrative summary been provided to evaluate the potential for hydrogeological connections between the contamination and the conduits? Y N 1 2 3
- Has a tabulation of all conduits and confined spaces been provided, which identify the type of conduit or confined space, conduit backfill material, slope of conduit and trench, and relationship to groundwater level? Y N 1 2 3
- C. Are the locations of all active, abandoned, and plugged groundwater wells within 1000' of the petroleum contaminated area provided? Has an on-site survey been conducted within a 100' radius of the site? Y N 1 2 3
- Are copies of available well logs and the names and addresses of well owners provided for identified wells within 1000 feet of the contaminated area? Y N 1 2 3

- D. Has a narrative summary been provided to evaluate any potential groundwater barriers (i.e. foundations, structures, parking lots, roads, etc.) which may have an impact on the movement of contamination?

Y N 1 2 3

Has a explanation been provided on the significance the identified barriers as related to the hydrogeologic conditions present at the site?

Y N 1 2 3

IX. Health & Safety Plan

Has a certification been presented which verifies that the On-Site Health & Safety plan conforms to applicable OSHA requirements?

Y N

X. Tabulation of Analytical Data

- A. Soil Analytical Data Information: has the table on page 15 been completed using the soil sample analytical data obtained during this and all previous investigations for each soil boring or MW?

Y N 1 2 3

- B. Groundwater Analytical Data Information: has the table on page 15 been completed using the groundwater analytical data obtained during this and all previous investigations. The list should be chronological and list each well sequentially

Y N 1 2 3

- C. Do the tables provided and the laboratory data sheets (= Appendix 12) agree?

Y N 1 2 3

Have copies of ALL analytical data sheets been provided?

Y N 1 2 3

XI. Free Product

- A. Has free product been identified at the site?

Y N

- B. If yes, is the date indicated when the "Free Product Removal Report" was submitted to the department?

Y N

- C. Is a narrative provided which discusses the status and effectiveness of the free product removal system in relation to the hydrogeologic conditions at the site?

Y N 1 2 3

XII. Contamination Source

- A. Has the source of contamination at the site been identified? Y N 1 2 3

Appendix 13 - Off-Site Contamination Source Support Data

Has sufficient evidence, including analytical data and maps showing potential off-site sources and groundwater flow direction, been provided to justify the conclusion that the contamination at this site is due to an off-site source?

Y N 1 2 3

XIII. SITE RISK CLASSIFICATION

Questions for evaluating if an adequate investigation has been completed to properly determine site risk classification. Justification **MUST** be provided, for each response, in Appendix 14.

A. JUSTIFICATION FOR HIGH RISK

1. Benzene in occupied structures:

- a. File review: Are there documented reports of fumes or vapors in occupied structures in the immediate area? Y N
- b. If yes, has an adequate investigation taken place to determine if the TLV-TWA for benzene in occupied structures exceeds or is likely to exceed 10 ppm in an 8 hour period? Y N 1 2 3
- c. If yes, is the method of analysis and all supporting laboratory data provided? Y N 1 2 3
- d. Has an appropriate justification been provided to determine risk classification? Y N 1 2 3

2. Combustible Gases in confined spaces:

- a. File review: Are there documented reports of fumes or vapors in structures, basements, sewers, utility conduits or any other confined space in the immediate area? Y N
- b. If yes, has an adequate investigation taken place to determine if the concentration of combustible gases exceeds or is likely to exceed 10% of the LEL? Y N 1 2 3

- 3
921-11-144
- c. If yes, is the method and instrument used for analysis identified? Y N 1 2 3
- d. Has an appropriate investigation been performed to evaluate the potential of combustible gases to collect in confined spaces in the petroleum contaminated area? Y N 1 2 3
3. Surface water criteria:
- a. File review: Are there documented reports of surface water quality violations suspected to be from the petroleum contamination at this site? Y N
- b. If yes, has an adequate investigation taken place to determine if the contamination at this site exceeds or is likely to exceed the water quality standards contained in Subrule 567--61.3(455B) of the IAC? Y N 1 2 3
- c. Has an appropriate investigation been performed to evaluate the potential of contamination migration to exceed the water quality criteria standard outlined in Subrule 567--61.3(455B) of the IAC? Y N 1 2 3
4. PVC Drinking Water Line:
- a. File review: Have there been any reports indicating that soil contamination may be in contact with a utility trench containing a PVC drinking water line in the area of petroleum contamination? Y N
- b. Has an adequate investigation been conducted to determine the extent of soil contamination which exceeds the corrective action limit in the vicinity of the PVC line? Y N 1 2 3
- c. Is the rationale for the response indicated (High risk or No) supported by maps and analytical data? Y N 1 2 3
5. Utility trenches:
- a. File review: Have there been any reports indicating that contamination which exceeds the corrective action limit, as contained in Subrule 567--135.6(8) of the IAC, is in contact with a utility trench? Y N
- b. Has an adequate investigation been conducted to determine the extent of soil and/or groundwater contamination which exceeds the corrective action limit in the vicinity of the utility conduits? Y N 1 2 3
- c. Is the rationale for the response indicated (High risk or No) supported by maps and analytical data? Y N 1 2 3

6. Damage to utility conduits or structures:

- a. File review: Have there been any reports indicating that contamination is present at concentrations which is causing or is likely to cause physical damage to a utility conduit or structure? Y N
- b. If yes, has an adequate investigation taken place to determine if the contamination is causing or is likely to cause damage to the utility structure? Y N 1 2 3
- c. Is the rationale for the response indicated (High risk or No) supported by maps and analytical data? Y N 1 2 3

7. Soil contamination (above CAL) within 1000 ft of an active well:

- a. Has soil contamination been identified at the site? Y N
- b. Are there any active groundwater wells, regardless of use, located within 1000 feet of the area of contamination? Y N 1 2 3
- c. Is the rationale for the response indicated supported by maps and analytical data? Y N 1 2 3
- d. Does the rationale provided outline sufficient evidence to justify the response indicated? Y N 1 2 3
- e. If classified as High Risk, has evidence been provided to justify that the site be reclassified as Low Risk? Y N 1 2 3
- f. Soil contamination (above CAL) in contact with protected groundwater source or groundwater source used as a public or private water source:
- a. Has soil contamination been identified at the site? Y N 1 2 3
- b. Has the seasonal high water table been identified? Y N 1 2 3
- c. Is the groundwater aquifer a protected groundwater source or a groundwater source used as a public/private water source? Y N 1 2 3
- d. Is there sufficient evidence to justify the response indicated (i.e. High Risk or No)? Y N 1 2 3
- e. Is the rationale for the response indicated supported by maps and analytical data? Y N 1 2 3

9. Karst topography or area of fractured limestone:

- a. Based on site or areal geology, is this contamination zone located within an area of fractured carbonate bedrock or in an area of karst topography? Y N 1 2 3

b. If yes, has this site been classified as high risk? Y N 1 2 3
 c. Has documentation been provided to indicate that this site may be reclassified as Low Risk based on the factors outlined on page 17 of 20, Section A., no. 9. Y N 1 2 3
 10. Private or public water supply:
 a. Are there any public or private water supplies located within the vicinity of the petroleum contaminated area? Y N 1 2 3
 b. If yes, has an adequate investigation taken place to determine if the contamination is affecting or may affect the water supply areas? Y N 1 2 3
 c. Has a public or private water supply been or likely to be impacted by contamination to the extent that an MCL is exceeded, or in the absence of an MCL, and Action Limit is exceeded? Y N 1 2 3
 11. Protected groundwater source:
 a. Has the groundwater at the site been impacted by contamination to the degree that an MCL or action level has been exceeded? Y N 1 2 3
 b. Has the groundwater been defined as a protected groundwater source? Y N 1 2 3
 c. If no to (b), has sufficient evidence, including analytical data (i.e., TDS), been provided to support conclusion? Y N 1 2 3
 12. Man-made structures:
 a. Are there any natural or man-made conduits located within 100 ft of the contaminated groundwater plume which could allow the vertical or horizontal migration of petroleum contamination to a protected groundwater source that is used as a water source? Y N 1 2 3
 b. If yes, has an adequate investigation taken place to determine if the contamination is migrating or is likely to migrate to the toward the protected groundwater source? Y N 1 2 3
 13. Public or private water source:
 a. Has the groundwater been impacted by petroleum contamination? Y N
 b. Is the contaminated groundwater plume within 1000 ft of an active public or private water source? Y N 1 2 3
 c. If yes, has evidence been provided to justify that the site be reclassified as Low Risk? Y N 1 2 3

14. Material separating groundwater source from contamination:

- a. Is there a minimum of three meters (9.75 ft) of uncontaminated soil, free of discontinuities, with a hydraulic conductivity of less than or equal to 10^{-4} meters/day, between the contamination zone and a protected groundwater source or a groundwater serving as a public or private water source? Y N 1 2 3
- b. If yes to (a), has sufficient evidence been provided to support the statement? Y N 1 2 3
- c. If classified as High Risk, has evidence been provided to justify that the site be reclassified as Low Risk? Y N 1 2 3

B. LOW RISK SITE CONDITIONS

1. Does the soil TOH concentration exceed 100 mg/Kg or does the groundwater contaminant concentration exceed the MCL or an Action Limit? Y N
2. If yes to 1, do High Risk conditions exist at the site? Y N 1 2 3
3. Do High Risk conditions #7, 9, 13, and/or 14 exist at the site? Y N
4. If yes to 3, has sufficient evidence been provided to support conclusions to reclassify as low risk? Y N 1 2 3

C. No Action Required Site Conditions

Does the SCR show that soil TOH concentrations are equal to or less than an MCL and that the groundwater contamination is equal to or less than an MCL or in the absence of an MCL, are equal to or less than an action level and high risk or low risk conditions do not exist and are not likely to occur? Y N 1 2 3

Do HIGH or LOW Risk conditions exist at the site? Y N 1 2 3

XIV. Corrective Action Response

A. High Risk Site Corrective Action Recommendations

1. Have the following been identified for the petroleum contaminated area:
- a. Vadose zone soil contamination? Y N 1 2 3
- b. If yes to 1a., has the approx. volume of contaminated soil been determined? Y N 1 2 3

- c. Dissolved phase petroleum product in the groundwater? Y N 1 2 3
- d. If yes to 1c., has the approx. volume of contaminated groundwater been determined? Y N 1 2 3
- e. Free phase petroleum product present? Y N 1 2 3
- f. If yes to 1e., has the approx. volume of free product been determined? Y N 1 2 3
2. Have at least two (2) applicable treatment technologies been proposed? Y N 1 2 3

Appendix 15 - "XIV (A3) - Treatment Technology Evaluation"

For each applicable treatment technology (minimum 2), has each of the following been identified and/or evaluated?

- 1) Identification of treatment technology
 - 2) treatment method effectiveness
 - 3) reliability
 - 4) site characteristics
 - 5) environmental, public health, and safety benefits and/or disadvantages
 - 6) costs
- Y N 1 2 3

4. Appendix 16 - "XIV (A4) - Best Available Technology (BAT)"

Has the BAT been identified? Y N 1 2 3

Has a in-depth evaluation, detailed justification, and explanation for selection of the treatment been provided? Y N 1 2 3

B. Low Risk Site Corrective Action Recommendations

1. Have the following been identified for the petroleum contaminated area:

- a. Vadose zone soil contamination? Y N 1 2 3
- b. If yes to 1a., has the approx. volume of contaminated soil been determined? Y N 1 2 3
- c. Dissolved phase petroleum product in the groundwater? Y N 1 2 3
- d. If yes to 1c., has the approx. volume of contaminated groundwater been determined? Y N 1 2 3
- e. Free phase petroleum product present? Y N 1 2 3
- f. If yes to 1e., has the approx. volume of free product been determined? Y N 1 2 3

Appendix 17 - "XIV (B2) - Best Management Practice"

Has a detailed "Best Management Practice" plan been provided which discusses the items listed on Page 20 of 20 of the SCR format, Section B(2)?

Y N 1 2 3

Appendix 18 - "XIV (B3) - Monitoring Plan"

Has a monitoring plan been provided which outlines the number and locations of monitoring sites, and is the plan consistent with expected contamination migration patterns?

Y N 1 2 3

If soil contamination is present, does the monitoring plan allow for the determination of the following:

- 1) movement of soil contamination?
- 2) a measurable decrease or increase of contaminant levels in the soil?
- 3) an impact to the groundwater?

Y N 1 2 3

Does the monitoring plan meet the frequency recommended?

Y N

Additional Comments:

IOWA
DEPARTMENT
OF NATURAL RESOURCES

LEAKING UNDERGROUND STORAGE TANK

SITE CLEANUP REPORT (SCR)

Iowa Department of Natural Resources
Underground Storage Tank Section
Wallace State Office Building
900 East Grand Avenue
Des Moines, IA 50319-0034
515/281-8893

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IDNR SITE CLEANUP REPORT INSTRUCTIONS AND GENERAL INFORMATION

SITE INVESTIGATION BUDGET APPROVALS

UST owners and operators eligible to receive state funds to cover site investigation expenses must submit the SCR preparation budget to the Iowa Underground Storage Tank Financial Responsibility Program and the IDNR prior to initiating work at the site. Failure to receive budget approval from the Iowa Underground Storage Tank Financial Responsibility Program prior to starting work at the site may result in a loss of state benefit eligibility.

GENERAL INSTRUCTIONS

This document provides guidance for preparing a Site Cleanup Report (SCR). The SCR consists of the results of the site assessment, risk classification (i.e., high, low or no risk) with supporting documentation and a recommended corrective action response. The corrective action response discusses cleanup options and selection of the most feasible cleanup methodology for high risk sites; the monitoring regimen for low risk sites or recommends no action for no risk sites.

To the extent practicable, during the preparation of the SCR, use generally available hydrological, geological, topographical, and geographical information in an attempt to minimize site specific testing. Ensure all maps are legible and have a north arrow, scale and legend. If possible, maps should either be prepared on 8 1/2 x 11 inch paper or reduced to that size with a single fold. In many instances, an area is provided in the SCR to record a response. Please limit the response to the area provided.

The SCR submittal must be accompanied by the appendices listed in the Appendices Check-Off Sheet. The appendices consist of analytical data, boring logs, tables, etc. Title and number each appendix as directed. Attach the appendices in the same order as listed on the Appendices Check-Off Sheet. Additional reports containing pertinent data not required by the SCR may be submitted. However, please ensure the SCR contains all the information requested.

Send one copy of the completed SCR and appendices to the Iowa Department of Natural Resources, LUST Coordinator, Wallace Building, Des Moines, IA 50319-0034 and, if the state UST Fund is being utilized, one copy of the completed SCR and appendices to GAB Business Services, Inc., POB 3037, Des Moines, IA 50322.

A response must be provided for all questions unless directed otherwise in the instructions. Incomplete GCRs and SCRs not submitted in the format required by this document and subrule 567-135.8 (455B) of the Iowa Administrative Code will be rejected. Reports must be signed by the responsible party and a registered groundwater professional. It is the responsibility of the tank owner or operator to ensure the groundwater professional prepares a report appropriate for the conditions at the site.

Copies of administrative rules may be obtained from IDNR Records Section by calling 515/242-5815.

LABORATORY METHODS

Iowa Method OA-1 must be used by laboratories for the analysis of soil and water for highly volatile petroleum compounds (i.e., gasoline, benzene, toluene, xylene). Iowa Method OA-2 must be used for the analysis of soil and water for low- or semi-volatile petroleum hydrocarbon contamination (i.e., all grades of diesel fuel, fuel oil, kerosene, oil, and mineral spirits). Copies of these methods are available from IDNR by calling 515/281-6710. Alternative analytical methods must be approved by IDNR. The alternative analytical method must be quantitatively equivalent to

QA-1 and/or QA-2. Groundwater samples must be analyzed for benzene, ethylbenzene, toluene and xylene. Soil samples must be analyzed for total organic hydrocarbons reported as all substances which have been stored in the tank(s) for the substance released, once that is established.

FREE PRODUCT REPORTING

Notify the department by calling 515/281-6010 within 24 hours if free phase product is encountered during on-site work. Free product removal must be conducted in accordance with 567-135.7(5)(455B) and reported to the DNR on the attached DNR Form Numbers 542-1424 and 542-1425.

ELEVATION MEASUREMENTS

All elevations required to be reported as feet above sea level (ASL) must be referenced to a National Geodetic Datum permanent or monumented control point benchmark. All ASL measurements taken at the site must be determined by a differential survey to the benchmark. Variations from this requirement must receive prior approval from IDNR.

PRECISION OF MEASUREMENTS

Top of casing elevations must be measured to the nearest 0.01 foot. Ground elevations must be measured to the nearest 0.1 foot. Static water levels must be measured to the nearest 0.01 foot. An adequate number of water levels must be measured in each well to determine the static water level.

HYDRAULIC CONDUCTIVITY MEASUREMENTS

Hydraulic conductivity is the rate of water movement through the soil and is measured in meters per day (m/d) as determined by the following methods. For a saturated soil, the Bouwer-Rice method or its equivalent must be used. For unsaturated soil, use a Guelph permeameter or an equivalent in situ constant-head permeameter in a boring finished above the water table. If an in situ method cannot be used for unsaturated soil because of depth or if the soil is homogeneous and lacks flow-conducting channels, fractures, cavities, etc., laboratory measurements of hydraulic conductivity are acceptable. Conditions requiring laboratory measurements must be clearly documented.

If laboratory methods are used, collect undisturbed soil samples using a thin-walled tube sampler in accordance with the American Society of Testing and Materials (ASTM) Standard D1587. Samples shall be clearly marked, preserved and transported to the laboratory. The laboratory shall measure hydraulic conductivity using a constant-head permeameter in accordance with ASTM Standard D2434 or a falling-head permeameter in accordance with accepted methodology.

PROTECTED GROUNDWATER SOURCE

A protected groundwater source is a saturated bed, formation or group of formations which has a hydraulic conductivity of at least 0.44 meters per day (m/d) and a total dissolved solids of less than 2,500 milligrams per liter (mg/L).

CLASSIFICATION OF SOILS

Use the Unified Soil Classification System (U.S. Department of Interior, Bureau of Reclamation) to describe soils and subsurface materials in boring logs, hydrogeological cross sections, site narratives, etc.

QUALITY CONTROL/QUALITY ASSURANCE PROCEDURES

The quality control/quality assurance (QC/QA) procedures used during the site investigation must be at least as stringent as those contained in IDNR's Leaking Underground Storage Tank Quality Assurance Plan. Copies of IDNR's Leaking Underground Storage Tank Quality Assurance Plan may be obtained by calling 515/281-6010. The groundwater professional that supervised the

3 743 72 7

Investigation must be able to provide IDNR with copies of the QC/QA plan designed for the site, field notes and chain custody forms on request.

MONITORING WELL DESIGN SUGGESTIONS

The diagram below illustrates the suggested monitoring well construction design. Site specific conditions may result in variations in well design and construction. The upper portion of the borehole must be sealed to prevent infiltration from the surface. Wells must be fitted with a lockable, above-ground protective device and clearly labeled. Flush-mounted wells should be constructed only when necessary. Monitoring well screens must be factory-fabricated. The screens must be long enough to accommodate seasonal groundwater level fluctuations. At a minimum, well screens must extend five feet above and below the static water level. Well construction details must be illustrated on the Soil Boring and Monitoring Well Construction Diagram (IDNR Form 542-1392). Assure well construction features are labeled and that the illustration accurately represents all dimensions.

PLUGGING ABANDONED WELLS AND BORINGS

All abandoned wells and borings that access groundwater must be plugged according to Chapter 567-39. Contact the IDNR Water Supply Section (515/242-6128) for additional information.

concerning this requirement. DNR Form 542-1226 must be completed for all plugged wells and boreholes.

SITE RISK CLASSIFICATION CRITERIA

Sites must be classified as either high risk, low risk or no action required. The risk assessment and classification shall be based on the actual or potential threat to public health and safety and the environment and shall take into account relevant factors, including the presence of petroleum contamination in soils, groundwater, and surface waters, site geology and the effect conduits, barriers and separation distances have on the contamination. The site classification determination must be based on information obtained during the site assessment investigation.

At a minimum, the following factors must be considered during the classification process when evaluating the presence of contamination in soils:

- 1) Depth of existing contamination in relation to the ground surface.
- 2) The separation distance between the contamination zone and groundwater.
- 3) The form, structure and variability of soils in the contamination zone.

At a minimum, the following factors must be considered, during the classification process, when evaluating for the presence of contamination in groundwater:

- 1) The depth of existing contamination in relation to the ground surface.
- 2) Depth of existing contamination in relation to the groundwater level.
- 3) Groundwater flow direction.
- 4) Groundwater flow direction relationship to the contamination zone.
- 5) Hydraulic and chemical properties of the aquifer or saturated zone.
- 6) Groundwater uses and the relationship between the contaminated groundwater zone and deeper aquifers.

At a minimum, the following factors must be considered during the classification process when evaluating the effects of conduits, barriers and distances on the contamination found in soils, groundwater and surface waters:

- 1) The effect of the contamination on such conduits as wells, utility lines, tile lines and drainage systems.
- 2) The effect conduits have on contaminant transport.
- 3) Whether a well is active or abandoned.
- 4) What function the utility conduit serves.
- 5) Existence of barriers (i.e., buildings, structures, pavement, natural, etc.).
- 6) The distance which separates the contamination found in soils, groundwater and surface waters from the conduits and barriers.
- 7) Hydraulic conductivity of the contaminated and surrounding soils.

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FREE PRODUCT RECOVERY INFORMATION

Ground Surface Elevation (ASL) 0.1': _____

Well Number _____

Provide a tabulation of free product and groundwater volumes removed from each well. List each extraction event chronologically with the oldest data first. The results for all events must be provided. Give all elevations as Above Sea Level (ASL). We suggest using a separate sheet for each recovery well.

[illegible]

IOWA DEPARTMENT OF NATURAL RESOURCES

*** IMPORTANT: READ ALL INSTRUCTIONS BEFORE COMPLETING ***

Leaking Underground Storage Tank Site Cleanup Report (SCR)

SITE IDENTIFICATION

LUST No. 7810058

UST Registration No.

7810058

Site Name: THE MARLEY PUMP COMPANY

Site Address: 500 EAST 59TH STREET

City: DAVENPORT

RESPONSIBLE PARTY IDENTIFICATION

Name: THE MARLEY PUMP COMPANY

Street: 500 EAST 59TH STREET

City: DAVENPORT

State: IA

Zip Code: 52808

Submit Date:

6/4/94

SITE RISK CLASSIFICATION (circle one)

HIGH RISK

LOW RISK

NO RISK

STATEMENT OF CERTIFICATION

The below named certify that this document, appendices and attachments satisfy the Site Cleanup Report requirements of Chapter 567-135(455b) of the Iowa Administrative Code and all other applicable state, federal and local requirements.

M. Scott

Print Name of Registered Groundwater Professional

Tim Scott #1406

Signature - Registered Groundwater Professional

Richard K. Nelson

Print Name of Responsible Party

Richard K. Nelson

Signature - Responsible Party

Official DNR Use Only

Date Received:

Reviewer:

Date Reviewed:

Comment Date:

Comment Date:

Approved Date:

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APPENDICES CHECK-OFF SHEET

Check the box to indicate the appendix is attached. Attach the appendices to the end of the SCR in the order listed.

- ☒ Appendix 1 "II(C) - Tank & Line Tightness Testing Results"
Copies of all results, supporting field data, and the third party evaluation of the leak detection system. Explain the cause of testing anomalies and discuss any corrective action or repairs made to the system. Label as II(C) - Tank & Line Tightness Testing Results.
- ☒ Appendix 2 "II(D) - Topographical Site Map"
Topographic map of the site and surrounding area. Label as II(D) - Topographical Site Map.
- ☒ Appendix 3 "II(E) - Scaled Site Plan"
Map showing the site and immediate surrounding area. Label as II(E) - Scaled Site Plan.
- ☒ Appendix 4 "II(F) - Scaled Site Vicinity Map"
Map showing the site in relation to general area features and the locations of properties adjacent to the site affected by the petroleum contamination or with potential to be affected as a result of contamination movement. Label as II(F) - Scaled Site Vicinity Map.
- ☒ Appendix 5 "III(B) - DNR FORM 542-1392, Soil Boring Logs"
Completed DNR FORM 542-1392 for each soil boring at the site. Label as III(B) - Soil Boring Log.
- ☒ Appendix 6 "III(H) - Soil Contamination Plume Map"
Soil contamination plume map depicting the full extent of vadose zone soils exceeding the soil contamination corrective action levels. Label as III(H) - Soil Contamination Plume Map.
- ☒ Appendix 7 "IV(B) - DNR FORM 542-1392, Monitoring Well Construction Diagram"
Completed DNR FORM 542-1392 for each monitoring well at the site. Label as IV(B) - Monitoring Well Construction Diagram.
- ☒ Appendix 8 "IV(G) - Groundwater Contour Map"
Groundwater contour map based on work done at the site. Label as IV(G) - Groundwater Contour Map.
- ☒ Appendix 9 "IV(I) - Groundwater Contamination Plume Maps"
Groundwater contamination plume maps depicting the full extent of free phase product and dissolved phase contamination exceeding the groundwater corrective action levels under 135.7(9) and the levels of groundwater contamination within the plume. Label as IV(I) - Groundwater Contamination Plume Map.
- ☒ Appendix 10 "VI - Hydrogeological Cross-Section Diagram"
Stratigraphically correlated hydrogeologic cross-section or three-dimensional diagram which adequately defines the spatial relationships of subsurface materials at the site. Label as VI - Hydrogeological Cross-Section Diagram.

☒ Appendix 11 "VIII - Receptor Survey Map"

Site area map with the results of the following receptor surveys illustrated:

- 1) Surface Water Body Survey. Location of surface water bodies (i.e., lakes, ponds, rivers, streams, etc.) within 1,000 feet of the petroleum contamination and evaluation of the potential for there to be a hydrogeological connection between the contamination and surface water.
- 2) Conduit Survey. Location of utility and natural conduits and confined spaces within 200 feet of the petroleum contamination and the results of investigations to determine the potential for the conduits to act as a pathway for vapors and product.
- 3) Groundwater Well Survey. Location of active, abandoned and plugged groundwater wells within 1,000 feet of the petroleum release.
- 4) Groundwater Barriers Survey. Locations of barriers and an explanation of their significance to contamination movement.

Label as VIII - Receptor Survey. Title survey narratives with the headings above.

☒ Appendix 12 "X - Laboratory Data Sheets"

Copies of laboratory data sheets. Label as X - Laboratory Data Sheets.

☒ Appendix 13 "XII(B) - Off-Site Contamination Source Support Data"

Data to support allegations of off-site contamination sources impacting the site. Label as XII(B) - Off-site Contamination Source Support Data.

☒ Appendix 14 "XIII - Site Risk Classification Justification"

Justification of risk classification. Label as XIII - Site Risk Classification Justification.

☒ Appendix 15 "XIV(A3) - Treatment Technology Evaluation" (High Risk Sites Only)

Evaluation of treatment technologies. Label as XIV(A3) - Treatment Technology Evaluation.

☒ Appendix 16 "XIV(A4) - Best Available Technology (BAT)" (High Risk Sites Only)

Identification of the best available treatment technology. Label as XIV(A4) - Best Available Technology (BAT).

☒ Appendix 17 "XIV(B2) - Best Management Practices" (Low Risk Sites Only)

Detailed best management practices plan. Label as XIV(B2) - Best Management Practices.

☒ Appendix 18 "XIV(B3) - Monitoring Plan" (Low Risk Sites Only)

Monitoring plan that will ensure any significant increase in contamination concentration or movement is detected. Label as XIV(B3) - Monitoring Plan.

Appendix A - Supplemental Information for I.C. - Site Owner Chronology

Appendix B - Supplemental Information for I.D. - Describe the circumstances of the discovery of the release.

Appendix C - Supplemental Information for II.B - Description of Existing UST System

Appendix D - Supplemental Information for Hydraulic Conductivity

Appendices A-D are chronologically inserted with regard to the IDNR pre-numbered appendices.

***** IMPORTANT: READ ALL INSTRUCTIONS BEFORE COMPLETING *****

(CONFINED YOUR ANSWERS TO THE SPACE PROVIDED UNLESS OTHERWISE NOTED)

Site History

A. Date the petroleum release was discovered: 03/18/92

B. Date the petroleum release was reported to DNR: 04/03/91

C. Site Owner Chronology (THIS PAGE MAY BE PHOTOCOPIED FOR ADDITIONAL SITE HISTORY)

Provide a chronological summary of past and present site and tank owners and operational history. Begin with the present and work backward. Include all periods of time petroleum products have been stored, used or sold on site. List the current mailing addresses of all previous owners and tank operators. List written contracts or agreements between land owners, real estate owners and tank operators. In the SITE ACTIVITY row, list number, capacity, and contents of past and present tanks, previous releases and tank closures.

DATE	2/8/88 - Present	Until 2/8/88	
LAND OWNER NAME AND ADDRESS	The Marley Pump Company 500 E. 59th Street Davenport, IA 52808	Nelle Westerfield and John H. Westerfield, John Westerfield Jr., Stephen J. Westerfield, and Peggy Westerfield.	
REAL ESTATE OWNER NAME & ADDRESS	Same	Same	
OPERATOR NAME AND ADDRESS	Same		
CONTRACT AGREEMENTS	See attached appendix for title documents and warranty deed.	See attached appendix for title documents and warranty deed.	
SITE ACTIVITIES	One 500-gallon manufactured steel UST was installed on 3/19/74 by the Marley Pump Company. This UST was used to store gasoline for the use and sole purpose of testing gasoline pumps. Fill lines, product lines, and dispensers did not exist as part of the UST system. The UST was active from its installation, 3/19/74, to July, 1983. During the tank's active life, the plumbing (not specified) leaked and was repaired on 3/13/78. During the time period 8/87 through 11/87, an unknown amount of fluid (gasoline and/or water) was removed from the UST and filled with sand (e.g. the UST was abandoned in place). A metal grate, which existed over the UST, was removed in 6/88. Sand and four inches of concrete were set in place of the former grate.		

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D. Describe the circumstances of the discovery of the release:

The Marley Pump Company planned to expand their pump testing facilities. The new facility would include three USTs. Prior to installing and constructing the testing facility, an environmental assessment needed to be conducted. The Marley Pump Company contracted Seneca Environmental Services, Inc. to conduct a subsurface investigation. On 3/18/92, Seneca drilled one borehole, BH-1, near the southwest corner of the testing facility. The data from this investigation indicated the presence of BTEX constituents in water only. See attached appendix for further information.

Soil, Benzene <0.5 ug/g	Water, Benzene 0.61 mg/l
Soil, Ethylbenzene <0.5 ug/g	Water, Ethylbenzene 0.25 mg/l
Soil, Toluene <0.5 ug/g	Water, Toluene 0.29 mg/l
Soil, Xylene <0.5 ug/g	Water, Xylene 0.25 mg/l
Soil, TPH <10 ug/g	Water, TPH 3.7 mg/l

E. Describe the initial actions taken to abate the petroleum release: The Marley Pump Company contracted Metcalf & Eddy, Inc. to conduct a limited subsurface investigation to investigate the lateral and vertical extent of contamination, if any.

F. Current Site Conditions**(CONFINE YOUR ANSWER TO THE SPACE PROVIDED)**

A. Provide a general description of the site geology: The subsurface soil is light brown to brown with gray/orange mottling. The soil consists mainly of the USCS classification ML (very soft silty clay/clayey silt) to the terrace of each boring. The boring/monitoring well is penetrated into a sand, silt clay with some fine pebbles (glacial till). The area of interest can be regionally characterized by thick sequences of fines (interbedded silts and clays), sand, and gravel. Also present is glacial till left behind by glacier activity. The site is located in the rolling hills of the dissected all plains of the Central Lowlands. The soils are derived from Kansan and Nebraskan till and outwash of Pleistocene age glaciation. Bedrock was not encountered during this investigation; however, literature published by the Iowa Geological Survey indicates that the underlying bedrock is the Lower detritals of Silurian age. The depth to bedrock is anticipated to be approximately 30 to 50 feet below grade at this site.

B. Description of the existing UST system: (THIS PAGE MAY BE PHOTOCOPIED IF MORE THAN 5 TANKS EXIST AT THIS SITE.)

Tank Number	1	2	3	4		
Capacity (Gallons)	500	500	500	500		
Product Stored	Gasoline	Unleaded	Unleaded	Unleaded/ Methanol		
Construction Material	Steel	Steel	Steel	Steel		
OPERATIONAL STATUS CHECK ONE BOX ONLY FOR EACH TANK						
Contains Product	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Contains MC product and is out of use	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Tank and line tightness tests required by DNR (yes or no)	No	No	No	No		
Tank Leak Rate (g/h)	NA					
Line Leak Rate (g/h)	NA					

>> Attach Appendix "III(C) - Tank and Line Tightness Testing Results"

If tanks or lines were tightness tested, attach copies of all results, supporting field data and the third party evaluation of the leak detection system. Explain the cause of testing anomalies and discuss any corrective actions or repairs made to the system.

>> D. Attach Appendix "III(D) - Topographical Site Map"

Provide a topographical map of the site and surrounding area developed from work done at the site, city surveys where available or USGS maps. Legible contour elevation differential no greater than ten feet must be provided. Two foot contour intervals are preferred.

>> E. Attach Appendix "IIE) - Scaled Site Plan"

Provide a scaled map (scale 1 inch = 20 to 50 feet) of the site and the immediate surrounding area. It must show the following, but is not limited to:

- 1) Location and content of existing and removed USTs, product lines and dispensers.
- 2) Permanent site features (i.e., buildings, roads, wells, waterways, sinkholes, etc.).

>> F. Attach Appendix "IIF) - Scaled Site Vicinity Map"

Provide a scaled (scale 1 inch = 200 to 500 feet) vicinity map showing the site in relation to surrounding general features. It must show the following, but is not limited to:

- 1) Permanent general features (i.e., buildings, roads, waterways, sinkholes, etc.).
- 2) Location of properties adjacent to the site affected or potentially affected by the contamination.

List below the names of owners of property affected or potentially affected by the contamination. Ensure the names correspond to the data provided on appendix "IIF) Scaled Site Vicinity Map."

Property Owner Name	Property Address	Owner Mailing Address
1) Hamilton Technical Institute	1011 E 53rd Street Des Moines, IA 52808	People contacted at this facility did not submit information after several attempts to contact them.
2) A-1 Renter	59th and Brady Des Moines, IA 52808	People at A-1 did not submit this information after several attempts to contact them.
3) Terminix	328 E. 59th Street Des Moines, IA 52809	People at Terminix did not submit this information after several attempts to contact them.
4) Village Inn Restaurant	5925 N. Brady Street Des Moines, IA 52808	People at Village Inn Restaurant did not submit this information after several attempts to contact them.
5) Motel 6	6111 N. Brady Street Des Moines, IA 52808	People at Motel 6 did not submit this information after several attempts to contact them.
6) Goodwin and Brahme	603 E. 59th Street Des Moines, IA 52807	Out of Business. Therefore, the owners could not be reached.
7) U. S. Cable	Out of Business. Address not listed in telephone book nor with P.O. telephone information.	Out of Business. Therefore, the owner could not be reached.
8)		
9)		
10)		
11)		

These businesses utilized the City of Des Moines as a water source.

III. Soil Sampling Methods and Findings

(CONFINE YOUR ANSWER TO THE SPACE PROVIDED)

A. Boring number and placement.

Explain and justify the rationale used to determine the number and placement of soil borings. Factors that should be taken into consideration when developing the rationale include site stratigraphy, media conductivity, mobility of contaminants and duration of the release. The number and placement of borings must be sufficient to allow the:

1) Determination of the lateral and vertical extent of soil contamination; 2) Accurate description of site stratigraphy; 3) Identification of the transition zone between those areas that do and do not exceed the soil contamination cleanup level. The identification of the transition zone will require the construction of contours developed through the interpolation of data. Additional information will be required to substantiate the location of contour lines if it is determined that the lines are not consistent with the rationale or data provided, or the interpolation techniques appear to be questionable.

M&E's investigation was based upon an initial investigation conducted Seneca Environmental. Placement of boring/monitoring wells were dependent upon restrictions of equipment size, underground utilities, buildings, anticipated groundwater flow direction, and preliminary environmental investigations performed. Building and utility location restrictions limited the placement of soil boring/monitoring wells.

MW-1: M&E chose the location of this well due to its close proximity to the abandoned in place UST. The purpose of this well was to verify the presence/absence of petroleum hydrocarbon in the subsurface adjacent to the UST; to gather water level data to gain a better understanding of the groundwater flow direction; to determine the vertical and lateral extent of potential contamination (this data, used in conjunction with the other well data, will help determine the lateral extent of contamination); to describe the site stratigraphy; and perform a slug test to determine hydraulic conductivity of groundwater.

MW-2: M&E located this well near the anticipated location of where Seneca drilled BH-1. The purpose of this well was to verify the presence/absence of petroleum hydrocarbon in the subsurface, to gather water level data to gain a better understanding of the groundwater flow direction; to determine the vertical and lateral extent of potential contamination (this data, used in conjunction with the other well data, will help determine the lateral extent of contamination); to describe the site stratigraphy; and perform a slug test to determine hydraulic conductivity of groundwater; to obtain a Shelby tube sample of soil so that a laboratory permeability test could be conducted (to determine laboratory hydraulic conductivity). Furthermore, this well was placed downgradient and near a steel gas main and a steel water main (both which intersect the new UST tanking facility) and to determine whether contaminants were migrating along the utility trenches.

MW-3: M&E chose the location of this well to obtain water level gauging data away from the influence of building structures; to provide background soil and groundwater quality data away from the influence (upgradient) of the abandoned in place UST; verify the presence/absence of petroleum hydrocarbon in the subsurface; to gather water level data to gain a better understanding of the groundwater flow direction; to determine the vertical and lateral extent of potential contamination; to describe the site stratigraphy away from the influence of potential fill areas, and perform a slug test to determine hydraulic conductivity of groundwater. This upgradient boring/monitoring well will determine if an off site contamination source exists.

GNW-4: This monitoring well location was based on the location of utilities. The purpose of this well is to collect groundwater elevation data to better determine the groundwater flow direction and to determine if petroleum hydrocarbons have migrated downgradient of MW-2 and possibly off site. This well was also placed to determine the transition zone between areas that were determined to be impacted versus those that were not impacted.

Additionally, three soil borings were completed around and adjacent to the UST. These borings were drilled to determine whether the native soil was impacted by petroleum hydrocarbons.

> B. Attach Appendix "IHB" - Soil Boring Logs

Complete and attach a DMR FORM 542-1382 for each soil boring at site.

C. Explain the actions taken to prevent cross-contamination between boreholes during installation and sampling.

All downhole equipment, augers, split spacers, etc., were decontaminated between each boring and after each use by steam cleaning with a high pressure portable steam water wash. Soil or debris not removable by the high pressure steam were removed by scrubbing with a scrub brush and Alconox and then steam cleaned. The steam cleaner utilized approximately 2,000 psi with temperatures of 200° F. Equipment such as stainless steel knives were washed with an Alconox/Decont water wash and a distilled water rinse. Each monitoring well was steam cleaned with a high pressure steam portable water wash. After cleaning, the wells were installed by personnel wearing new latex gloves.

minutes. A MicroTap Photoionization Detector (PID) was used to conduct a field survey and vapor headspace analysis and conduct a

16-8, 0 ppm, 17-19 feet, 0 ppm. * Sample taken for laboratory analysis.

[illegible]

to 2.5 feet. For each borehole, the sampling interval did not exceed 5 feet.

conductivity.

IV. Groundwater Sampling Methods and Findings

(CONFINE YOUR ANSWER TO THE SPACE PROVIDED)

A. Boring number and placement.

Explain and justify the rationale used to determine the number and placement of groundwater monitoring wells. Factors that should be taken into consideration when developing the rationale include site stratigraphy, media conductivity, mobility of contaminants and duration of the release. The number and placement of wells must be sufficient to allow the: 1) Determination of the lateral and vertical extent of groundwater contamination; 2) Accurate description of site stratigraphy; 3) Identification of the transition zone between clean areas that do and do not exceed the contamination cleanup level. The identification of a transition zone will require the construction of contours developed through the interpolation of data. Additional information will be required to substantiate the location of contour lines if it is determined that the data are not consistent with the rationale or data provided, or the interpolation techniques appear to be questionable.

Consideration of boring placement was given so that the most data can be obtained from one desirable soil boring/monitoring well location. Revisions of boring/monitoring well placement included utility location, equipment size, and obstructions. Four monitoring wells were chosen to help develop a groundwater contour map. Also, the wells were placed in such a way so as to help determine the extent of contamination (lateral and vertical), provide background data, verify other consultant's data, and to determine whether the backfill of utility trenches, and eventually the native soil material, was impacted by petroleum hydrocarbons.

See Section III - Soil Sampling Methods and Findings, Page 8 of 20, for further details on soil boring/monitoring well placement.

>> B. Attach Appendix "IV(B) - Monitoring Well Construction Diagram"

Complete and attach a DNR FORM 542-1182 for each monitoring well constructed at the site.

C. Explain permanent monitoring well construction.

If the following well construction material or dimensions vary, indicate the variations on DNR FORM 542-1182.

- 1) Method of clearing well components prior to installation. Screen cleaning, 2000 psi with water temperatures of 200°F.
- 2) Casing and screen material. 2-inch diameter flush threaded PVC.
- 3) Screen slot size. 0.010-inch machine slot.
- 4) How the sections or casings and screens are connected. Flush threaded joints.
- 5) Method used to install filter pack and seals. The material was placed in the annular space of the hollow stem auger and monitoring well by pouring sand from a bag and bentonite pellets from a bucket. As the materials were placed into the annular space, the hollow stem augers were incrementally raised so the material would fall out of the augers and between the well and native soil. The cement was placed into the annular space by pouring the mixture from a wheelbarrow (the annular space, when filled with sand and bentonite pellets, was shallow enough that pouring was more feasible than a tremie pipe.)
- 6) Actions taken to prevent cross-contamination of wells during construction and sampling. The monitoring wells were pressure steam washed prior to their insertion into the borehole. Clean latex gloves were used to handle all downhole materials.
- 7) Monitoring well development procedures. Bat with a pre-cleaned (Alconox and distilled water) 5-foot long PVC bailer. Bailed either 2-5 well volumes of water until pH, SC, and TOC are stable, or until dry. In this case, the wells were developed until dry.

D. For samples collected from boreholes: (Temporary casing and screen are required prior to sample collection.)

- 1) Describe the type and size of temporary casing and screen.
- 2) Explain and justify the adequacy of well development procedures to ensure a representative sample.

E. Explain and justify the adequacy of groundwater sampling and well purging methods.

Well purging: The monitoring wells were purged with a pre-cleaned PVC bailer and new rope. Usually, 3 well volumes of water are removed so that new groundwater, more representative of the aquifer, will be sampled. One well volume is calculated as 2.14 ft³ * 7.48 gal/ft³. In this case, the wells were purged dry.

Groundwater sampling: Groundwater samples were collected from the four on-site monitoring wells with a disposable Teflon bailer and new rope. The water from the monitoring well was placed immediately into 40 ml vials, placed on ice (4°C), and shipped by express courier to Southwest Laboratory of Oklahoma.

F. Groundwater Data for Contour Map Development

(SURVEY DATA FROM ADJACENT SITES MAY BE UTILIZED)

Well/Boring Number	Date Measured	Static Water Level (ASL) (to D.C.T.R.)	Water Level Corrected due to Free Product * (Yes/No)	Product Depth	Ground Surface Elevation (ASL) (to D.C.T.R.)
MW-1	9/17/82	702.79	no	inches	715.88
MW-2	9/17/82	699.89	no	inches	715.88
MW-3	9/17/82	703.81	no	inches	715.23
MW-1	10/1/82	704.65	no	inches	715.88
MW-2	10/1/82	701.81	no	inches	715.88
MW-3	10/1/82	705.53	no	inches	715.23
MW-1	10/20/82	702.09	no	inches	715.88
MW-2	10/20/82	698.97	no	inches	715.88
MW-3	10/20/82	703.37	no	inches	715.23
MW-4	10/20/82	698.95	no	inches	715.11
MW-3	1/5/84	701.27	no	inches	715.88
				inches	
				inches	
				inches	

* Describe below the correction method used to determine the static water level.

Static water levels did not need to be corrected since there was no free product in the wells.

Describe the benchmark used to survey for groundwater surface elevations.

The bench/marking wells were resurveyed (ASL) using a manhole cover located southeast of the Marley Pump Company, on top of a pump house, and 700 feet east of Brady Street on the north side of 58th Street. The benchmark was provided by the City Engineering Department of Denverport, Iowa.

>> G. Attach Appendix "IVIGI- Groundwater Contour Map"

Provide a groundwater contour map based on work done at the site and the adjacent area. All wells at the site must be shown on the map. Wells constructed in different aquifers must be identified. Indicate the groundwater flow direction with an arrow. Groundwater contours and elevations at each date point used for contouring must be labeled on the map. Contours must be consistent with observed water level elevations. Measurements of static water level and depth to the bottom of the wells must be taken. An adequate number of water levels must be measured in each well to determine the static water level. Static water levels must be measured to the nearest 0.01 feet. Identify wells used to determine hydraulic conductivity.

H. Describe and explain the following:

- 1) Identify the methodology and device used to determine static groundwater levels. An interphase probe (IP) is a device used to measure the level of both free-phase hydrocarbons and water. The water level measurement was taken on the north side of the tip of the PVC casing. The water level was recorded when an audible tone was evident. The IP is capable of measuring water to within 0.01" accuracy.
- 2) Provide confirmation that the methodology used will provide the required levels of accuracy. The MicroTip helps the user through a 12 step process to ensure that the PID is calibrated appropriately. The MicroTip is calibrated to display concentrations in units equivalent to ppm. First, zero air, which contains no ionizable gases or vapors, is used to set the zero point. The span gas, containing a known concentration of a photoionizable gas or vapor, is used to set the sensitivity. Isobutylene at 100 ppm in air is recommended and was used during all calibration procedures.
- 3) Groundwater flows and any anomalous water levels. Anomalous groundwater levels did not exist during this sampling round.
- 4) Fluctuations in water levels with special emphasis on those which may alter general groundwater gradient or flow direction.

No change of groundwater flow direction occurred during this sampling period. Static water levels were taken on 9/18/82, 10/2/82 and 10/20/83. Monitoring well MW-3 was remeasured on 1/8/84.

>> I Attach Appendix "VIII - Groundwater Contamination Plume Maps"

Provide groundwater contamination plume maps depicting the full extent of free phase product and dissolved phase contamination exceeding the groundwater corrective action levels under 135.719) and the levels of groundwater contamination within the plume. The extent of off site groundwater contamination must be investigated. Label each data point with the contaminant concentrations used to determine the extent of the plume. The map must contain a sufficient number of data points to adequately justify the construction of plume contours. Identify free product thickness.

V. Sampling Quality Control

(CONFINE YOUR ANSWER TO THE SPACE PROVIDED)

Provide a statement that indicates the quality control/quality assurance (QC/QA) procedures used during the site investigation were at least as stringent as those contained in IDNR's Leaking Underground Storage Tank Quality Assurance Plan.

The Marley Pump company's consultant followed IDNR's QA/QC procedures. MBE has prepared a QAPP to conduct the field work. It exceeded those requirements required by IDNR.

VI. Hydrogeological Cross-Sections

>> Attach Appendix "VI - Hydrogeological Cross-Section Diagram"

Develop, from the borings that were required to identify the extent of contamination, stratigraphically correlated hydrogeologic cross-sections at three-dimensional diagrams which adequately define the spatial relationships of subsurface materials at the site. The cross-sections should illustrate the materials in the contamination zone. The sections or diagrams must include the following information:

- 1) Identification of types and characteristics of the geological materials present.
- 2) Identification of contact zones between different geological materials, noting zones of high permeability or fracture.
- 3) Detailed borehole information including location, depth of termination and zone of saturation.

VII. Hydraulic Conductivity

(CONFINE YOUR ANSWER TO THE SPACE PROVIDED)

A. Determine and record here the hydraulic conductivity of subsurface materials at the site. Identify borings and wells used to determine hydraulic conductivity. Include calculations and data used to obtain the values.

The Bowen Rice calculation for hydraulic conductivity was used. Baildown tests were performed in three monitoring wells, MW-1, MW-2, and MW-3. A hydraulic conductivity test was not conducted in MW-4 because of the uniform stratigraphy across the site. Hydraulic conductivity tests were performed to illustrate the uniform magnitude across the site.

MW-1: $k = 0.00874$ m/day MW-2: $k = 0.00804$ m/day MW-3: $k = 0.00883$ m/day

Calculations are provided in the attached Appendix.

B. Indicate the method used.

C. If an equivalent method was used to determine conductivity, evaluate its accuracy.

D. Explain why the location/number of data points where hydraulic conductivity was determined adequately provides a representative indication of conductivity at the site.

Hydraulic conductivity tests were performed in each well (except MW-4) to illustrate the uniform magnitude across the site (all data was within one order of magnitude).

VII. Receptor Survey

>> Attach Appendix "VII - Receptor Survey Map"

Provide a site area map that identifies the following:

A. Surface Water Body Survey: Location of surface water bodies (i.e., lakes, ponds, rivers, streams, etc.) within 1000 feet of the petroleum contamination area. Include an evaluation of the potential for hydrogeological connections between the contamination and surface water. Justify the decision to conduct or not to conduct monitoring to determine the impact of contamination on surface water quality. Grab samples are typically collected to determine the impact of contamination on surface water quality. Samples taken upstream of the release can help establish the background levels for the compounds of concern. Subsequent samples taken downstream will provide information regarding contaminant concentration versus travel time. If surface water sampling is conducted, provide a discussion of the sampling methodology and evaluate the adequacy of the sampling program. Tabulate the analytical results. Also record visual observations (i.e., silt, sludge, count, etc.). Label the narrative and analytical results in Appendix VII pertaining to the above with the heading "Surface Body Receptor Survey".

B. Conduit Survey: Location of utility (i.e., power lines, storm and sanitary sewers, telephone lines, etc.), natural (i.e., sinkholes, caves, etc.) conduits and confined spaces (i.e., basements, crawl spaces, etc.) within 200 feet of the area of petroleum contamination. Include a description of the investigation conducted to determine the potential for the conduits to act as pathways for vapors and product. The investigation must include soil gas collection for laboratory analysis and vapor monitoring. The focus of the investigation should be influenced by soil types, product type, phase and concentration, location and depth of the utilities and confined spaces and groundwater elevations. In tabular form, define the type of conduit or confined space, conduit backfill material, slope of conduit and branch, and relationship to groundwater levels. Tabulate the analytical results. Indicate if contamination has resulted in the presence of explosive vapors or needed physical damage to conduits or confined spaces. Label the narrative and analytical results in Appendix VII pertaining to the above with the heading "Conduit Survey".

The following are recommended when conducting a vapor survey in an area with vapor product:

The vapor survey is required if there are reports of vapors or if the conduit has been impacted by the contamination or if there is the potential for vapors based on the type of substance release.

1. Use an explosimeter and photoionization detector (PID) to take vapor readings. Start at the manway closest to the site. Walk upstream and downstream to determine if and where the product or vapors are entering, and the extent of the impacted area. "Criss" each manway cover and take readings of oxygen, explosimeter and PID. Repeat measurements at two-depth and water level or bottom of the conduit.
2. Check air flow directions from the manway to determine if diffusion of vapors is occurring.
3. Collect water or sewage samples. Observe for silt and odors. If there is odor but no product, consider using the PID to obtain a head space analysis.
4. Check all incoming conduit branches. If odors are detected, continue the investigation upstream and downstream even if no product is present.
5. Check lift stations near the site.

The following are recommended when conducting a confined space survey:

- 1) Check confined spaces using an explosimeter and P.D. Record names and addresses of building residents/owners.
- 2) Check for vapors near basements, sewer drains and near any foundation cracks.

Groundwater Survey.

Identifying active, inactive, abandoned and plugged groundwater wells within 1,000 feet of the petroleum contaminated area. Groundwater professionals only need to report well information readily available from public entities (i.e., county health or zoning departments, IDNR, Water Supply Section (615/242-6122), Geological Survey Bureau (319/335-1575), etc., and water well owners. An on-site survey will be necessary to identify all the wells in a 300-foot radius of the petroleum contaminated area. Include in the appendix:

- 1) Copies of available well logs
- 2) Name and address of each well owner. Correlate with well number.
- 3) Description of the plugging method for those wells not sealed according to chapter 567-39 IAC.
- 4) Complete the following table:

(PHOTOCOPY IF ADDITIONAL SPACE IS NEEDED)

Well # as Identified on Recorder Survey Map	Fire Facility Well	Factory Well	Test Well									
Well Status												
Active	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inactive	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Abandoned	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plugged - According to Ch. 39	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Not according to Ch. 39	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Describe in the appendix the plugging process used for each well marked.

Well Use For Each Well, Mark All That Apply

Well Use												
Public Well	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Private Drinking Water	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Test Well		<input checked="" type="checkbox"/>										
Industrial Supply		<input checked="" type="checkbox"/>										
Static Water Level Elevation	NA	NA	NA									
Well Depth Elevation (Above Grade)	Approx. 240	Approx. 140	200									
Well Diameter	NA	NA	6"									
Casing Material	Steel	Steel	Steel									
Well Log Provided	NO	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TRE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Label the narrative and information in Appendix VII pertaining to the above with the heading "Groundwater Well Survey."

D. Groundwater Barrier Survey

Identify the location of barriers (i.e., foundations, structures, parking lots, roads, natural, etc.) that could have an impact on the movement of the contamination. Explain the significance of the barriers by noting their proximity to the hydrogeological conditions at the site. Label the narrative in Appendix VII pertaining to the above information with the heading "Groundwater Barrier Survey."

IX. Certification of Site Health & Safety

(REQUIRED)

Statement of Verification of On-Site Health & Safety Procedures

The on-site health and safety procedures and conditions conform with applicable OSHA requirements.

Yes ☐ No ☐

X. Tabulation of Analytical Data

(PHOTOCOPY THIS FORM IF ADDITIONAL SPACE IS NEEDED)

Soil Analytical Data Information

Provide a tabulation of analytical data for each soil boring or monitoring well. List each sampling event chronologically with the oldest data first. Boreings were sampled on a particular day at different elevations, list the results for the samples closest to the ground surface first. Record all elevations as feet Above Sea Level (ASL).

Boring/Well Number	MHW-1	MHW-1	MHW-2	MHW-3	MHW-3B	MHW-4	S-1	S-2	S-3	
Date Sampled	8/18/92	8/18/92	8/18/92	8/18/92	8/18/92	10/18/92	10/18/92	10/18/92	10/18/92	
Stratigraphic (ft ASL) - Ground Surface	715.88	715.88	715.54	715.22	715.33	715.11	715.48	715.88	715.88	
Soil Sample	708.18	696.18	710.55	703.72	707.23	705.81	711.48	708.88	708.18	
- Static Groundwater	702.88	702.88	696.87	705.81	705.87	705.88				
Total Petroleum Hydrocarbons (ppm)	0.00867	0.00867	ND	0.018	ND	ND	0.0138	ND	0.013	
Extractable Hydrocarbons (ppm)										

Groundwater Analytical Data Information

Provide a tabulation of groundwater sampling analytical data. List the sampling events starting with the first well in the well identification scheme. If the well was sampled more than once, list each result chronologically. Record all elevations as feet Above Sea Level (ASL).

Boring/Well Number	MHW-1	MHW-1	MHW-3	MHW-3	MHW-3B	MHW-4				
Date	10/20/92	10/20/92	10/20/92	10/20/92	10/20/92	10/20/92				
Stratigraphic (ft ASL) - Piezometric Elevation	715.88	715.88	715.22	715.11	715.11	715.88				
- Top of Screen	708.88	702.88	704.22	708.81	705.81	708.88				
- Static Water Level	702.88	696.87	702.27	696.88	696.88	705.82				
Chloride (ppm)	ND	1.88	7.8	ND	ND	ND				
Sulfate (ppm)	ND	3.62	2.8	ND	ND	ND				
Total Dissolved Solids (ppm)	1.62	21.8	25.8	ND	ND	15				
Specific Conductance (ppm)	9.62	178	9.1	ND	ND	ND				
Notes										

>> Attach Appendix X "Laboratory Data Sheets"

Provide copies of all laboratory data sheets

Free Product

(CONFINED YOUR ANSWER TO THE SPACE PROVIDED)

A. Is free product present at the site? YES: NO (X)

B. If yes, indicate the date the "Free Product Removal Report" was submitted:

C. Discuss the status and evaluate the effectiveness of the free product removal system in relation to the hydrogeological conditions at the site.

Provide monthly reports to DNR on the attached DNR FORMS 542-1424 and 542-1425.

XII. Contamination Source

A. Identify the source of contamination at the site.

The potential source of contamination is a 500-gallon manufactured steel UST.

> > B. Attach Appendix "XIII(B) - Off-Site Contamination Source Support Data"

If the contamination source identified in XIII(A) is an off-site source, justify your conclusion with analytical data and maps showing the site under investigation and potential off-site sources and groundwater flow direction.

XIII. Site Risk Classification

HIGH RISK SITE CONDITIONS

The following describe high risk site conditions. Conditions numbered 7, 9, 12, and 14 include a means, based on specific site factors, for proposing a low risk classification. Check the appropriate box if documentation has been provided to substantiate the existence of specific site conditions that will result in a low risk classification. A site is classified as high risk if any of the following conditions exist and documentation is not provided to confirm a low risk classification. All responses must be justified with technical and hydrogeological data obtained during the site assessment and the application of recognized engineering, geological and hydrogeological principles. Give your justification for each answer on appendix "XIII - Site Risk Classification Justification." Number the responses to correspond with the condition description (e.g., A1, A2, etc.).

CONDITIONS DESCRIPTION

1) The Threshold Limit Value-Time Weighted Average (TLV-TWA) for benzene in occupied structures exceeds or is likely to exceed 10 parts per million for more than 8 hours per day.	<input type="checkbox"/> YES, HIGH RISK <input type="checkbox"/> NO
2) The concentration of combustible gases in structures, basements, crawl spaces, utility conduits, storm or sanitary sewers, vaults or any other confined space exceeds or is likely to exceed 10% of the Lower Explosive Limit (LEL).	<input type="checkbox"/> YES, HIGH RISK <input type="checkbox"/> NO
3) Surface water quality criteria standards contained in subrule 567.01.31455B) of the Iowa Administrative Code are exceeded or are likely to be exceeded due to a hydrogeologic connection between the surface water and the contamination zone.	<input type="checkbox"/> YES, HIGH RISK <input type="checkbox"/> NO
4) Petroleum contaminated soil exceeding 100 mg/kg total organic hydrocarbons is in contact with a utility trench containing a PVC drinking water transmission line.	<input type="checkbox"/> YES, HIGH RISK <input type="checkbox"/> NO
5) The petroleum contamination in utility trenches exceeds the corrective action levels in 135.810) of the Iowa Administrative Code.	<input type="checkbox"/> YES, HIGH RISK <input type="checkbox"/> NO
6) Petroleum contamination is present at concentrations, or concentrations are likely to occur to cause physical damage to a utility conduit or structure.	<input type="checkbox"/> YES, HIGH RISK <input type="checkbox"/> NO
7) Soil with a total organic hydrocarbon level greater than 100 mg/kg is located within 1,000 feet of an active well used as a public or private water source. (A site may be classified as low risk if a groundwater professional can demonstrate the water source will not be impacted by the soil contamination to the extent that a MCL is exceeded, or in the absence of a MCL, an Action Level is exceeded. Factors that must be considered in evaluating the impact of the remaining soil contamination include well depth, construction, radius of influence and use; area hydrogeological characteristics; soil permeability; transmissivity, and contamination concentrations and persistence; chemical characteristics, and migration potential of the released substance.)	<input type="checkbox"/> YES, HIGH RISK <input type="checkbox"/> NO Documentation is provided to support a LOW RISK CLASSIFICATION <input type="checkbox"/> YES, LOW RISK <input type="checkbox"/> NO
8) Soil with a total organic hydrocarbon level greater than 100 mg/kg is located within the seasonal high groundwater level of a protected groundwater source or groundwater serving a public or private water source.	<input type="checkbox"/> YES, HIGH RISK <input type="checkbox"/> NO
9) The petroleum release occurred in an area of fractured limestone or karst topography (i.e., topography formed on limestone, gypsum, and other rocks by dissolution, characterized by sinkholes, caves, and underground drainage). (A site may be classified as low risk if a groundwater professional can demonstrate that the protected groundwater source in the area of the petroleum release will not be impacted by the contamination to the extent that a MCL is exceeded, or in the absence of a MCL, an Action Level is exceeded. Factors that must be considered in evaluating the impact of the petroleum contamination include area hydrogeological characteristics; separation distance between the contaminated zone and protected groundwater sources; soil permeability and transmissivity; overburden thickness and contamination concentrations; and the persistence, chemical characteristics and migration potential of the released substance.)	<input type="checkbox"/> YES, HIGH RISK <input type="checkbox"/> NO Documentation is provided to support a LOW RISK CLASSIFICATION <input type="checkbox"/> YES, LOW RISK <input type="checkbox"/> NO
10) A public or private water supply is or is likely to be contaminated to the extent that a MCL is exceeded; or in the absence of a MCL, an Action Level is exceeded.	<input type="checkbox"/> YES, HIGH RISK <input type="checkbox"/> NO
11) A protected groundwater source is contaminated to the extent that a MCL is exceeded; or in the absence of a MCL, an Action Level is exceeded.	<input type="checkbox"/> YES, HIGH RISK <input type="checkbox"/> NO

12) The contaminated groundwater plume is within 100 feet of natural or man-made structures or conduits that could allow the vertical or horizontal migration of contaminants to a protected groundwater source that is used as a public or private water source.	<input type="checkbox"/> YES, HIGH RISK <input type="checkbox"/> NO
13) The contaminated groundwater plume is within 1,000 feet of an active public or private water source. (A site may be classified as low risk if a groundwater professional can demonstrate that the protected groundwater source will not be impacted by the groundwater contamination to the extent that a MCL is exceeded, or in the absence of a MCL, an Action Level is exceeded. Factors that must be considered in evaluating the impact of the remaining groundwater contamination include well depth, construction, radius of influence and area hydrogeological characteristics, soil permeability and transmissivity, contamination concentrations and persistence, chemical characteristics and migration potential of the released substance.)	<input type="checkbox"/> YES, HIGH RISK <input type="checkbox"/> NO Documentation is provided to support a LOW RISK CLASSIFICATION <input type="checkbox"/> YES, LOW RISK <input type="checkbox"/> NO
14) The material seeping groundwater serving as a public or private water source, or which is a protected groundwater source, from soil with a total organic hydrocarbon level greater than 100 mg/kg which has a hydraulic conductivity greater than 10^{-4} meters per day. (The separating material must have a hydraulic conductivity less than or equal to 10^{-4} meters per day, a minimum thickness of three meters and be free of surface discontinuities between the contamination zone and the groundwater for the site to be classified low risk. A site can be classified low risk if a groundwater professional can demonstrate with hydrogeological and risk assessment data that the separating material will prevent or inhibit the migration of contaminants to the groundwater to the extent that a MCL is exceeded, or in the absence of a MCL, an Action Level will not be exceeded. A sufficient number of measurements of the hydraulic conductivity shall be made to accurately identify the hydrogeologic conditions of the separating material under the full area extent of the contamination zone. Measurements shall be made at a minimum of two locations. The distance between adjacent measurement locations shall not exceed 100 feet. The department may require additional measurements based on the hydrogeological complexity of the site.)	<input type="checkbox"/> YES, HIGH RISK <input type="checkbox"/> NO Documentation is provided to support a LOW RISK CLASSIFICATION <input type="checkbox"/> YES, LOW RISK <input type="checkbox"/> NO

Maximum Contaminant Level as defined in subrule 567.41.3(455B) of the Iowa Administrative Code

Action Level as defined in 567.133.2(455B, 455E) of the Iowa Administrative Code

B. LOW RISK SITE CONDITIONS

The following describe low risk site conditions. Check the boxes that describe the site conditions.

CONDITIONS DESCRIPTION

1) The soil total organic hydrocarbon concentration exceeds 100 mg/kg or the groundwater concentration exceeds a MCL, or in the absence of a MCL, an Action Level is exceeded, but high risk conditions do not exist and are not likely to occur.	<input type="checkbox"/> YES, LOW RISK <input type="checkbox"/> NO
2) High risk conditions numbered 7, 9, 13 or 14 exist, but documentation is provided to substantiate the claim that specific site conditions or processes that will result in a low risk classification.	<input type="checkbox"/> YES, LOW RISK <input type="checkbox"/> NO

Maximum Contaminant Level as defined in subrule 567.41.3(455B) of the Iowa Administrative Code

Action Level as defined in 567.133.2(455B, 455E) of the Iowa Administrative Code

C. NO ACTION REQUIRED SITE CONDITIONS

The following describe no action required site conditions. Check the boxes that describe the site conditions.

CONDITIONS DESCRIPTION

1) The soil total organic hydrocarbon concentration is equal to or less than 100 mg/kg and the groundwater concentration is equal to or less than a MCL, or in the absence of a MCL, is equal to or less than an Action Level, and high risk or low risk conditions do not exist and are not likely to occur.	<input type="checkbox"/> YES, NO ACTION <input type="checkbox"/> NO
>> Attach Appendix "J" - Site Risk Classification Justification	

Maximum Contaminant Level as defined in subrule 567.41.3(455B) of the Iowa Administrative Code

Action Level as defined in 567.133.2(455B, 455E) of the Iowa Administrative Code

XIV. Corrective Action Response

The corrective action response involves the identification of the best available treatment technology or best available management practices to address the contamination at the site. The corrective action response must be consistent with the site risk classification.

Contaminated sites classified as high risk can be reclassified to low risk if the condition causing the classification is abated. For example, if the only reason a site was classified high risk is because the soil around a PVC water line is contaminated, the site could be reclassified to low risk if the water line was replaced. For such sites identified as high risk, propose a corrective action response that will result in the reclassification of the site to low risk.

Please proceed to part "A" if the site has been classified as high risk. Sites classified as low risk are subject to best management practices which will include contamination monitoring. Please proceed to part "B" if the site has been classified as low risk. Sites classified as no risk are not required to remediate or monitor.

A. High Risk Site Corrective Action Recommendations

1. Identify below the contamination phases and estimated phase volumes at the site:

Volatile Zone soil contamination present?

If yes, approximate volume of contaminated soil present.

YES () NO ()

Cubic Yards

Dissolved phase petroleum (product) present in the groundwater?

If yes, approximate volume of contaminated groundwater present.

YES () NO ()

Gallons

Free phase petroleum product present?

If yes, approximate volume of free phase product present.

YES () NO ()

Gallons

2. List at least two treatment technologies available to address the contamination at the site.

> 3. Attach Appendix "XIV(A3) - Treatment Technology Evaluation"

Provide an evaluation of each treatment technology listed in XIV(A3) organized as follows:

- 1) Treatment Technology. Identify the treatment technology.
- 2) Treatment Method Effectiveness. Evaluate the treatment method's capability to reduce the compounds of concern to acceptable levels and estimate the length of time it will take to reduce the compounds to these levels.
- 3) Reliability. Evaluate factors that may have an impact on the reliability of the treatment system. Consider such factors as groundwater quality, biological growths, design complexity, weather, operational maintenance and monitoring requirements, etc.
- 4) Site Characteristics. Evaluate the factors that may have an impact on the practicality of using the treatment method. Consider such factors as site geology, hydraulic conductivity, groundwater quality, site location and ability to maintain and monitor hydraulic control of the groundwater plume.
- 5) Cost Estimate. Evaluate start-up, operational and maintenance costs.
- 6) Environmental, Public Health and Safety Benefits and Disadvantages. Evaluate the environmental and public health and safety benefits and disadvantages of the treatment system. Consider such factors as air emissions, waste water discharges, groundwater injection systems, permits required, vandalism, access, etc.

>> 4. Attach Appendix "XIV(A4) - Best Available Technology"

Let your selection of the best available treatment technology to address the contamination phases at the site. Provide a detailed justification and explanation for selection of this technology. See the justification narrative on professional judgment considering actual cost, actual equipment or techniques currently in use, published technical articles, site hydrogeology and research results, engineering and groundwater professional reference materials, consultation with experts in the field, capital and operation costs, and guidelines or rules of other regulatory agencies. Innovative treatment technology design selections are encouraged but must be accompanied by system operational and technical data that will support the best available treatment technology selection. Do not initiate treatment system design work until the proposed best available treatment technology concept has been accepted by IDNR.

5. Report Submittal

Please send one copy of the completed SCR and appendices to the Iowa Department of Natural Resources, List Coordinator, Wallace Building, Des Moines, IA 50319 and one copy of the completed SCR and appendices to GAB Business Services, Inc. POB 3837, Des Moines, IA 50322. Additional information or clarification may be requested.

Following approval of the SCR, IDNR will require the submission of a Corrective Action Design Report (CADR). The CADR will contain technical information specific to the treatment system chosen to remediate the site and a monitoring proposal designed to determine the effectiveness of the system.

B. Low Risk Site Corrective Action Recommendations

1. Identify below the contamination phases and estimated phase volumes at the site:

Vadose zone soil contamination present?

If yes, approximate volume of contaminated soil present.

YES ()

NO (x)

NA _____ Cubic Yards

Dissolved phase petroleum product present in the groundwater?

If yes, approximate volume of contaminated groundwater present.

YES (x)

NO ()

241.83 _____ Gallons

Free phase petroleum product present?

If yes, approximate volume of free phase product present

YES ()

NO (x)

NA _____ Gallons

>> 2. Attach Appendix "XIV(B2) - Best Management Practices"

Provide a detailed best management practice plan. At a minimum, the plan must contain:

1. Description of leak detection activities that will be implemented at the site.
2. Schedule of activities and description of any prohibited practices, and other management practices, or a combination thereof, which will be implemented to prevent additional contamination.
3. Assurances the analytical and investigatory technical requirements discussed and referenced in this SCR will be followed. Vapor analyzer results will be accepted provided that:

- a. It can be demonstrated that the media being sampled and sampling points are conducive to the detection of contamination movement and increases in concentration (i.e., the sampling radius must be determined).
- b. Gas chromatography or similar method of analysis is used for analysis of samples.
- c. Samples for laboratory analysis must be obtained if the following screening levels are exceeded.

0.1 mg/L	TPHC (near diesel facilities) for soil gas (in situ, partial vacuum extraction)
0.1 mg/L	TPHC (near gasoline facilities) for soil gas (in situ, partial vacuum extraction)
0.5 mg/L	TPHC for groundwater (head space analysis)
0.1 mg/L	TPHC (near diesel facilities) for soil (head space analysis)
10.0 mg/L	TPHC (near gasoline facilities) for soil (head space analysis)

>> 3. Attach Appendix "XIV(B3) - Monitoring Plan"

Provide a monitoring plan that will ensure any significant increase in contamination concentration or movement is detected. The number and locations of monitoring sites must be consistent with contamination plume definition, soil permeabilities, hydraulic conductivities and groundwater flow direction. Include site map to show monitoring locations. The following frequency is recommended. Any proposed reduction in the recommended sampling must be justified. Factors that must be considered in the justification include the migration potential of the released substance, potential impact on the environment and public health if migration of the soil or groundwater contamination occurs, site hydrogeologic characteristics, soil permeability, permeability, and contamination concentrations and persistence.

YEARS AFTER APPROVAL OF THE MONITORING PLAN

SAMPLE IN

4. Report Submittal

Please send one copy of the completed SCR and appendices to the Iowa Department of Natural Resources, List Coordinator, Wallace Building, Des Moines, IA 50319 and one copy of the completed SCR and appendices to GAB Business Services, Inc. POB 3837, Des Moines, IA 50322. Additional information or clarification may be requested.

Monitoring results must be submitted in the format required by IDNR's Site Monitoring Report. A copy of the Site Monitoring Report will be provided after the SCR is approved.

APPENDIX II (C)
TANK & LINE TIGHTNESS TESTING RESULTS

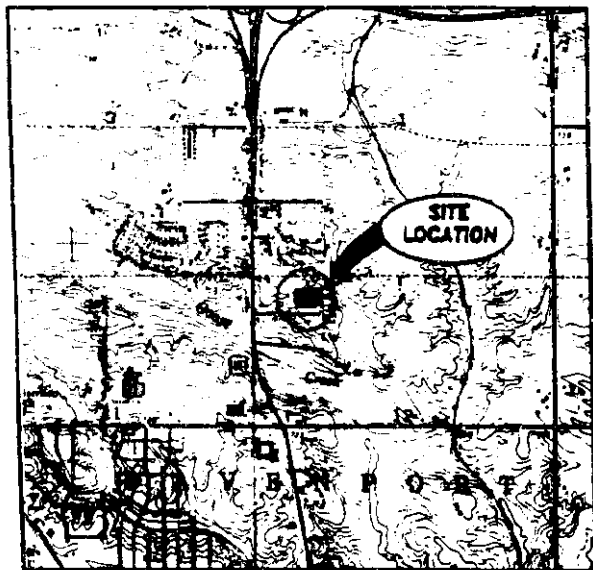
Tank and line tightness testing was not completed on this 500-gallon abandoned in place tank. The tank was closed in place prior to any effective IDNR regulations.

Tank tightness testing was completed for the three newly installed tanks. The tanks passed Seneca Corporation's tank tightness testing with no anomalies. Tank tightness testing for the new USTs are not required as part of this SCR.



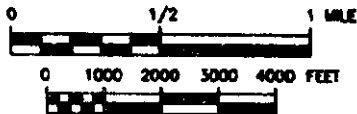
SITE LOCATION

COOK COUNTY
T 78 N, R2W SEC. 12



SOURCE: U.S.G.S. DAVENPORT EAST, IOWA - ILL. (1975)
CONTOUR INTERVAL - 10 FEET

SCALE: 1:24000



TOPOGRAPHICAL SITE MAP

The Morley Pump Company
500 E. 58th Street
Davenport, Iowa

METCALF & EDDY

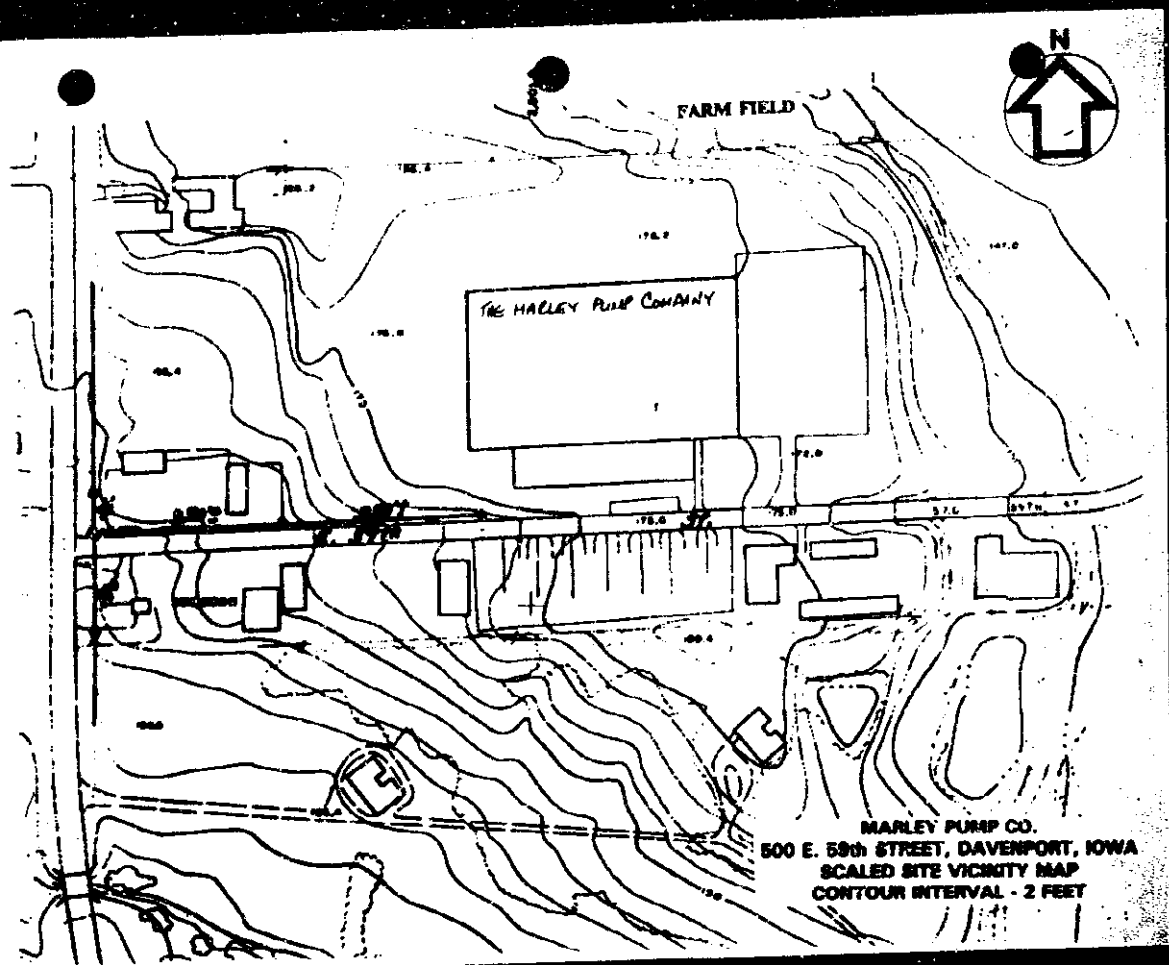
APPENDIX II(F)
SCALED SITE VICINITY MAP



FARM FIELD

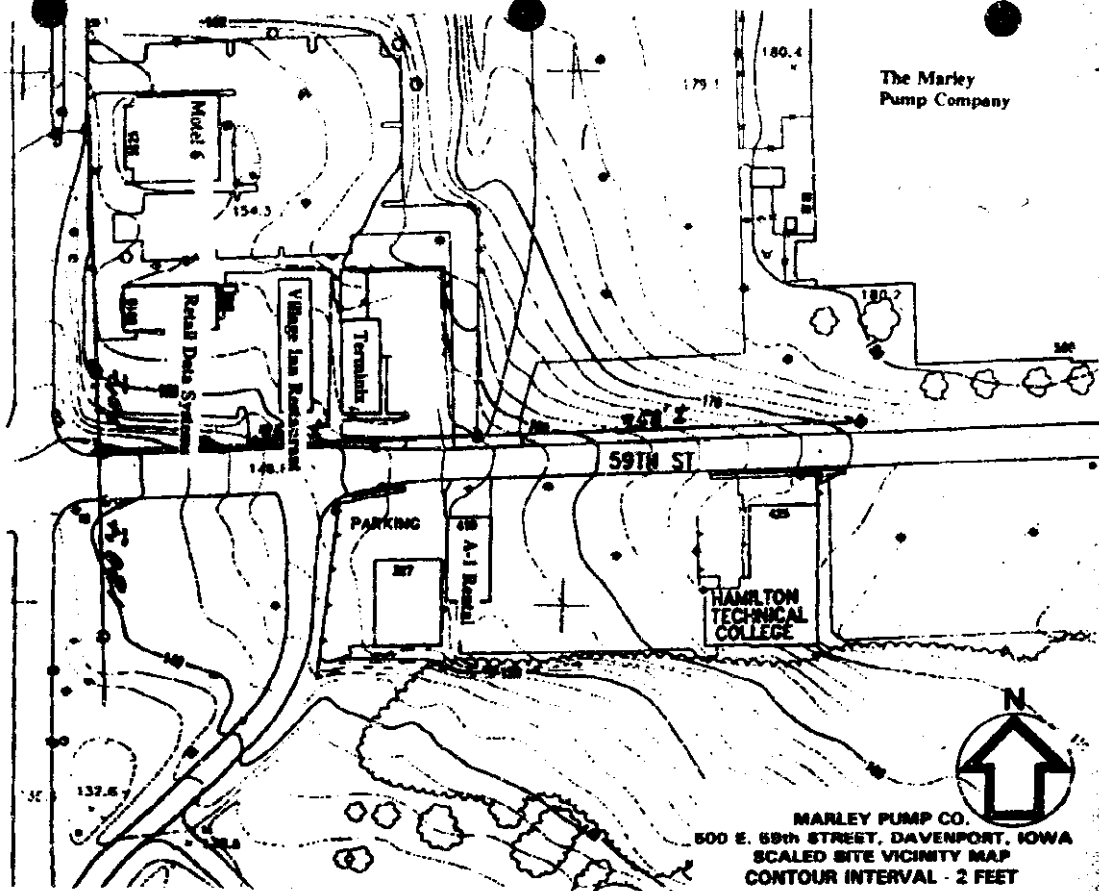
THE HARLEY PUMP COMPANY

MARLEY PUMP CO.
500 E. 59th STREET, DAVENPORT, IOWA
SCALED SITE VICINITY MAP
CONTOUR INTERVAL - 2 FEET



BRADY ST

63



FARM FIELD



FARM FIELD

Allen Sign Co.
Quality Printers
Machinery and Supply

Eagle Construction

Paddition Boarding Kennel

Refractory Insulation Supply Inc.

Crucible Service Center

H&H

Engineered Seal Products

Nelson Plumbing

Campbell Electric

Iowa Bearing

Crystal Refrigeration

Aero Plumbing

CREEK

Jacks

Wagner Printers

59th Street

U.S. Cable

Goodwin & Brothers Inc.

Ramilton Tech. Institute

EXTENDED SITE VICINITY MAP
NO CONTOUR INTERVAL

Contour interval not provided. Those shown are greater than 1,000 feet every from Marley.

SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

Boring/Well # MW-1	Facility Name MARLEY PUMP COMPANY	Facility Address 500 E. 59th ST. DAVENPORT, IOWA
Boring Depth (Feet) x Diameter (Inches) 25' x 6.25"	Drilling Method HOLLOW STEM AUGER	
Well Contractor INDECO INC	Logged by METCALF & EDDY	
Date & Time Start 9/16/92 0910	Date & Time End 9/16/92 1020	Ground Surface Elevation (ASL) 715.68'
		Last Number BLTS84

Depth in Feet	Well Construction Details	Blew Count	Sample No.	Type	PID/PID Reading	Rock Formations, Soil, Color and Classifications, Observations (moisture, etc.)
0-2.5	▼ 11.03 ▼ 12.89	NA	1	3" O.D. 5' LONG SS	0 ppm	Moist brown, silty fine sand, trace organics (SM)
2.5-5.0		NA	2	3" O.D. 5' LONG SS	178 ppm = Questionable PID Reading	Moist brown with gray mottling silt with trace organics (SM)
5.0-7.5		NA	3		PID Not Working Properly	Brown with gray mottling, moist, silt with trace clay (ML)
7.5-10.0		NA	4	PID Not Working Properly	Brown with gray mottling, moist, silt with trace clay (ML)	
10.0-12.5		NA	5	0 ppm	Brown with gray mottling, moist, soft silt with some clay (ML)	
12.5-15.0		NA	6	0 ppm	Brown and gray, moist, soft, clayey silt (ML)	
15.0-17.5		NA	7	0 ppm	Brown and gray, moist, very soft clayey silt (ML)	
17.5-20.0		NA	8	0 ppm	Gray, moist, very soft, clayey silt (ML)	

* SS (split spoon) MS (hollow stem auger)

OBSERVATIONS WATER LEVELS Static Water Level Symbol v	Date	9/17/92	10/1/92	5/25/94			
	Level	12.89	11.03	13.65			
	Time	0745	0745	1020			

SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

Boring/Well # MW-1	Facility Name MARLEY PUMP COMPANY	Facility Address 500 E. 55th ST. DAVENPORT, IOWA
Boring Depth (Feet) x Diameter (Inches) 25' x 5.25"	Drilling Method HOLLOW STEM AUGER	
Well Contractor INDECO INC. Registration # I.D. 0007201	Logged by METCALF & EDDY	
Date & Time Start 9/16/92 0910	Date & Time End 9/16/92 1020	Ground Surface Elevation (ASL) 715.68'
		Last Number 8LTSB4

Depth in Feet	Well Construction Details	Blow Count	Sample No. Type *	PH/TO Reading	Rock Formations, Soil, Color and Classifications, Observations (moisture, etc.)
20.0-22.5		NA	9 3" O.D. 5' LONG SS	0 ppm	Gray moist soft clayey silt (ML)
22.5-25.0		NA	10	0 ppm	Gray moist silty clay (CL). At 24.5-25.0 ft, dry, hard, glacial till with many fine pebbles (CL)
	E.O.B. - 25ft				

* SS (split spoon) HS (hollow stem auger)

OBSERVATIONS	Date					
WATER LEVELS	Level					
Static Water Level Symbol v	Time					

SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

Boring/Well # MW-2	Facility Name MARLEY PUMP COMPANY	Facility Address 500 E. 59th ST. JAVENPORT, IOWA
Boring Depth (Feet) x Diameter (Inches) 25' x 6.25"	Drilling Method HOLLOW STEM AUGER	
Well Contractor INDECO INC	Logged by METCALF & EDDY	
Registration # ID. 0007201	Date & Time Start 9/15/92 1110	Date & Time End 9/16/92 1220
Ground Surface Elevation (ASL) 715.56'		Last Number 8LTS84

Depth in Feet	Well Construction Details	Bore Count	Sample No.	Type	P10/F10 Reading	Rock Formations, Soil Color and Classifications, Observations (moisture, etc.)
0-2.5		NA	1	3" O.D. 5' LONG SS	0 ppm	Black-brown, damp, silty fine sand, with trace organics (SH) Black, damp, fine sand with medium sand, little silt (SW)
2.5-5.0		NA	2		0 ppm	Brown damp hard clayey silt (ML)
5.0-7.5		NA	3	3" O.D. 5' LONG SS	0 ppm	Brown-black damp clayey silt, soft, trace organics (ML)
7.5-10.0		NA	4		0 ppm	Light brown and gray mottled moist, soft clayey silt (ML)
10.0-12.5		NA	5	3" O.D. 5' LONG SS	0 ppm	Brown and gray, moist, soft clayey silt (ML)
12.5-15.0	▼ 13.75	NA	6		0 ppm	Brown and gray, moist, soft clayey silt (ML)
15.0-17.5	▼ 15.61	NA	7	3" O.D. 5' LONG SS	0 ppm	Brown and gray mottled moist, soft clayey silt (ML)
17.5-20.0		NA	8		0 ppm	Brown and gray mottled very moist, soft clayey silt (ML)

* SS (split spoon), HS (hollow stem auger)

OBSERVATIONS WATER LEVELS Static Water Level Symbol	Date	9/17/92	10/1/92	5/25/94			
	Level	15.67	13.75	18.28			
	Time	0745	0745	0950			

SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

Boring/Well # MW-2	Facility Name MARLEY PUMP COMPANY	Facility Address 500 E. 59th ST. DAVENPORT, IOWA				
Boring Depth (Feet) x Diameter (Inches) 25' x 6.25"	Drilling Method HOLLOW STEM AUGER					
Well Contractor INDECO INC	Logged by METCALF & EDDY					
Registration # I.O. 0007201						
Date & Time Start 9/16/92 1110	Date & Time End 9/16/92 1220	Ground Surface Elevation (ASL) 715.56'				
		Last Number 8LTS84				
Depth in Feet	Well Construction Details	Bore Count	Sample No.	Type *	PH/FID Reading	Rock Formations, Soil Color and Classifications, Observations (moisture, etc.)
20.0-22.5		NA	9	3" O.D. 5' LONG SS	0 ppm	Gray, moist, very soft silty clay (CL)
22.5-25.0		NA	10		0 ppm	Gray damp silty clay with some medium sand (SM/SC) Gray dry hard, plastic till (1 ft) (CL)
	E.O.B. - 25ft					

* SS (split spoon) HS (hollow stem auger)

OBSERVATIONS	Date						
WATER LEVELS	Level						
Static Water Level Symbol v	Time						

SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

Boring/Well # MW-3	Facility Name MARLEY PUMP COMPANY	Facility Address 500 E. 58th ST. DAVENPORT, IOWA
Boring Depth (Feet) x Diameter (Inches) 25' x 6.25"	Drilling Method HOLLOW STEM AUGER	
Well Contractor INDECO INC. Registration # I.D. 0007201	Logged by METCALF & EDDY	
Date & Time Start 9/16/92 1330	Date & Time End 9/16/92 1450	Ground Surface Elevation (ASL) 715.23'
		Last Number BLTS84

Depth in Feet	Well Construction Details	Blow Count	Sample		PID/PID Reading	Rock Formations, Soil, Color and Classifications, Observations (moisture, etc.)
			No.	Type *		
0-25		NA	1	3" O.D. 5' LONG SS	0 ppm	Brown, damp, silt with some clay, little fine sand (ML)
25-50		NA	2		0 ppm	Brown, damp, soft, clayey silt, little fine sand, trace organics (ML)
50-75		NA	3	3" O.D. 5' LONG SS	0 ppm	Light brown with gray mottling, damp, very soft clayey silt (ML)
75-100	▼ 97	NA	4		0 ppm	Brown with gray mottling damp to moist, very soft, clayey silt (ML)
100-125	▼ 11.62	NA	5	3" O.D. 5' LONG SS	0 ppm	Light brown with gray mottling, very soft clayey silt (ML)
125-150		NA	6		0 ppm	Light brown with gray mottling very soft clayey silt (ML)
150-175		NA	7	3" O.D. 5' LONG SS	141 ppm	Gray moist very soft clayey silt (ML)
175-200		NA	8		0 ppm	Gray moist very soft clayey silt (ML)

* SS (split spoon) MS (hollow stem auger)

OBSERVATIONS WATER LEVELS Static Water Level Symbol v	Date:	9/17/92	10/1/92	5/25/94	1/9/94		
	Level:	11.62	9.7	12.86	15.41		
	Time:	0745	0745	1000	-		

SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

Boring/Well # UW-3	Facility Name	MARLEY PUMP COMPANY		Facility Address	500 E. 50th ST. DAVENPORT, IOWA	
Boring Depth (Feet) x Diameter (Inches) 25 x 6.25			Drilling Method HOLLOW STEM AUGER			
Well Contractor INDECO INC			Logged by METCALF & EDDY			
Date & Time Start		9/16/92 1330		Date & Time End		9/16/92 1450
Ground Surface Elevation (ASL)			715.23'		Last Number 8LTS84	
Depth in Feet	Well Construction Details	Blow Count	Sample No. Type =		PID/PID Reading	Rock Formations, Soil, Color and Classifications, Observations (moisture, etc.)
20.0-22.5		NA	9	3" O.D. 5' LONG SS	0 ppm	Gray, moist very soft clay silt. 20-21R (ML) Gray dry hard clay with fine pebbles (CL)
22.5-25.0		NA	10		0 ppm	Gray, dry, hard clay with fine pebble-grained silt (CL)
E.O.B. - 25ft						

* SS (spiral spoon) HS (hollow stem auger)

OBSERVATIONS	Date						
WATER LEVELS	Level						
Static Water Level Symbol *	Time						

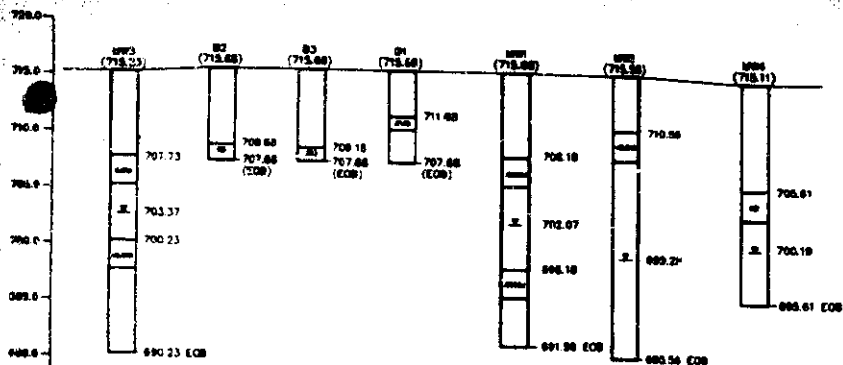
SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

Boring/Well # MW-4	Facility Name MARLEY PUMP COMPANY	Facility Address 500 E. 59th ST. DAVENPORT, IOWA
Boring Depth (Feet) ± Diameter (Inches) 19.5' ± 6.25"	Drilling Method HOLLOW STEM AUGER	
Well Contractor TERRACON CONSULTANTS Registration # 10, 40278	Logged by D. STORY METCALF & EDDY	
Date & Time Start 10/19/93 1340	Date & Time End 10/19/93 1505	Ground Surface Elevation (ASL) 715.11'
		Lost Number BLTS84

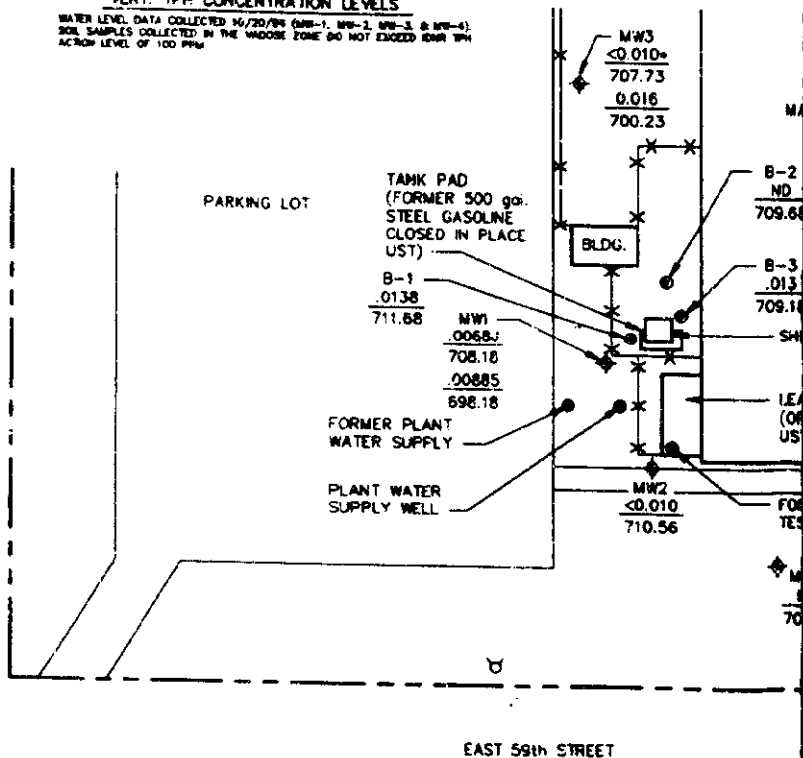
Depth in Feet	Well Construction Details	Blow Count	Sample		PI/PID Reading	Rock Formations, Soil Color and Classifications, Observations (moisture, etc.)
			No.	Type		
2.0-4.0		3/3/2/3	1	2" O.D. 2' LONG SS	0.2 ppm	Brown w/ orange striations, med. dense, slightly plastic damp, silty clay (CL)
4.5-6.5		2/2/2/3	2	2" O.D. 2' LONG SS	0.2 ppm	Top 10" - Brown, dense, moist plastic clay (CL) Bottom 5" - black/gray, dry, slightly plastic clay (CC)
7.0-9.0		1/1/2/1	3	2" O.D. 2' LONG SS	0 ppm	Brown, med. dense, damp, slightly plastic silt with some clay. At bottom 2" brown/gray mottled (ML)
9.5-11.5		1/3/4/4	4	2" O.D. 2' LONG SS	0 ppm	Tan/gray, moist, slightly plastic med. dense silt. Bottom 6" has orange striations (ML)
12.0-14.0		2/2/2/3	5	2" O.D. 2' LONG SS	0 ppm	Tan/gray with orange striations, med. dense, slightly plastic, wet, silt (ML)
14.5-16.5	▼ 16.16	2/2/2/3	6	2" O.D. 2' LONG SS	0 ppm	Tan/gray with orange striations, med. dense, slightly plastic, wet, silt (ML)
17.0-19.0		2/2/1/2	7	2" O.D. 2' LONG SS	0 ppm	Tan/gray with orange striations, med. dense, slightly plastic, wet, silt (ML)
19.5-21.5		2/2/3/3	8	2" O.D. 2' LONG SS	0 ppm	Top 12" - gray with orange striations, silty clay, dense slightly plastic (CL) Bottom 12" - gray, very dense, moist, fine gravel (TLL)

* SS (sp.) spoon; H.S. (hollow stem auger)

OBSERVATIONS WATER LEVELS Static Water Level Symbol =	Date	10/20/93	9/25/94				
	Level	16.78	16.92				
	Time	0830	0825				



VERT. TPH CONCENTRATION LEVELS





0 25 50 100

SCALE IN FEET

LEGEND

- = PROPERTY LINE
- - - - - = FENCE
- ⊕ = FIRE HYDRANT
- ⊕ = MONITORING WELL
- ⊕ = SOIL BORING
- = WELL
- ▼ = GROUNDWATER ELEVATION
- J = ESTIMATED VALUE
CONCENTRATION BELOW
LABORATORY DETECTION
LIMIT.
- .0068J
709.18 = CONC. OF TPH IN PPM
(HORIZONTAL DISPLAY)
- ☐ = SOIL SAMPLE ELEVATION
- ☐ = CONC. OF TPH IN PPM
(VERTICAL DISPLAY)

- DUPLICATE SAMPLE YIELD EXACT RESULTS

NOTE:

MW1, MW2, & MW3 WERE USED TO DETERMINE
IN-SITU HYDRAULIC CONDUCTIVITY. A
LABORATORY PERMEABILITY TEST WAS
CONDUCTED FROM SOIL COLLECTED FROM MW2.

ELEVATIONS WERE MEASURED AGAINST MEAN
SEA LEVEL.

IDNR ACTION LEVEL FOR TPH (100 PPM) WAS
NOT EXCEEDED IN ANY SOIL SAMPLE COLLECTED
IN THE VADOSE ZONE FOR EACH SOIL BORING
OR MONITORING WELL. THEREFORE, A PLUME
MAP ILLUSTRATING OR SATURATED EXCEEDANCE
OF 100 PPM TPH IS NOT APPLICABLE.

MW4 DATA COLLECTED ON 10/19/93

**SOIL CONTAMINATION
PLUME MAP**

The Marley Pump Company
500 E. 59th Street
Davenport, Iowa

METCALF & EDDY

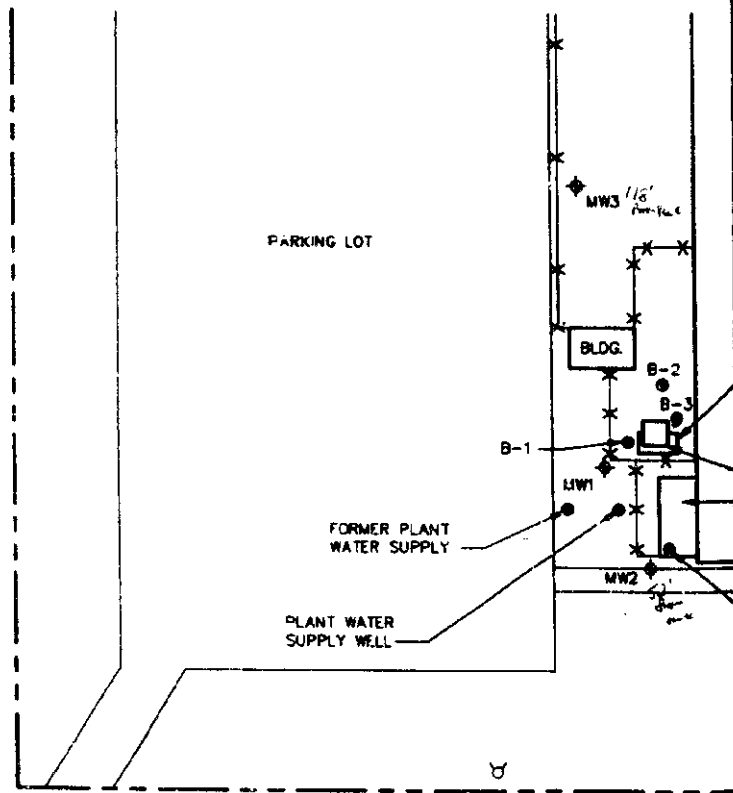
MANUFACTURING BUILDING

IN TO
OPERATING
(SYSTEM)

WATER
T WELLS

OFFICE BUILDING

MW4
D
5.61



EAST 59th STREET



0 25 50 100

SCALE IN FEET

LEGEND

- = PROPERTY LINE
- = FENCE
- ⌘ = FIRE HYDRANT
- ◆ MW3 = MONITORING WELL
- ⊙ B1 = SOIL BORING
- = WELL

MANUFACTURING BUILDING

NO PRODUCT LINES OR DISPENSERS WERE USED FOR 500 gal. UST. THIS WAS A TEST TANK ONLY.

USTs

- 1 - 500 GALLON MANUFACTURED STEEL GASOLINE UST. NO PRODUCT LINES, FILL LINES, OR DISPENSERS ASSOCIATED WITH THIS UST. ABANDONED IN PLACE 8/87 - 11/87.
- 3 - 560 GALLON DOUBLE WALL STEEL WITH STP3 TANKS. THE USTs WERE INSTALLED 3/92 AND CONTAIN UNLEADED GASOLINE OR METHANOL. NO UNDER YARD PIPING ALL ABOVE GROUND. NO FUEL IS DISPENSED. FUEL IS RECIRCULATED BACK TO TANKS. THESE ARE TEST TANKS ONLY.

TANK PAD
(FORMER 500 gal.
STEEL GASOLINE
CLOSED IN PLACE
UST)

SHED

LEAN TO
(OPERATING
UST SYSTEM)

FORMER
TEST WELL

OFFICE BUILDING

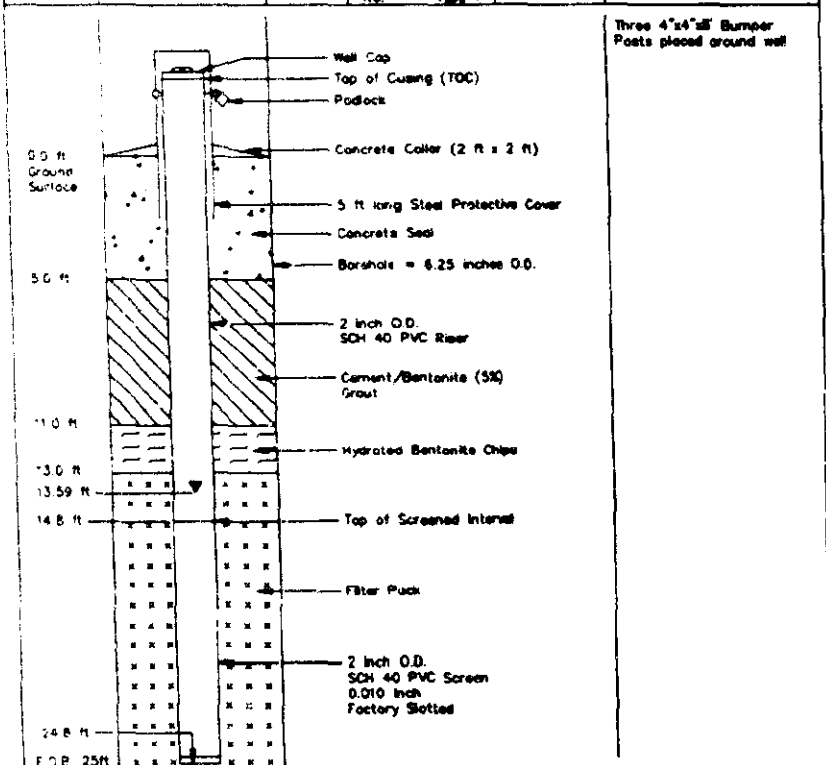
◆ MW4
No Pump
found

SCALED SITE PLAN

The Marley Pump Company
500 E. 59th Street
Davenport, Iowa

SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

Boring/Well # WW-1	Facility Name MARLEY PUMP COMPANY	Facility Address 300 E. 59th ST. DAVENPORT, IOWA
Boring Depth (Feet) x Diameter (Inches) 25' x 6.25"	Drilling Method HOLLOW STEM AUGER	
Well Contractor INDECO INC	Logged by METCALF & EDDY	
Registration # I.D. 0007201	Date & Time Start 9/16/92 0910	Date & Time End 9/16/92 1020
	Ground Surface Elevation (ASL) 715.68'	Last Number 8LTS84
Depth in Feet	Well Construction Details	Blow Count
	Sample No. Type	PID/FID Reading
	Rock Formations, Soil, Color and Descriptions, Observations (moisture, etc.)	



* SS (split spoon) HS (hollow stem auger)

OBSERVATIONS WATER LEVELS Static Water Level Symbol v	Date:	9/16/92	10/20/93				
	Level:	14.75	13.98				
	Time:	0840	0830				

SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

Boring/Well # MW-2	Facility Name MARLEY PUMP COMPANY	Facility Address 500 E. 59th ST. DAVENPORT, IOWA
Boring Depth (Feet) x Diameter (Inches) 25' x 6.25"	Drilling Method HOLLOW STEM AUGER	
Well Contractor INDECO INC	Logged by METCALF & EDDY	
Registration # I.D. 0007201	Date & Time 9/16/92 1110	Date & Time 9/16/92 1220
	Ground Surface Elevation (ASL) 715.56'	Last Number 8LTS84
Depth in Feet	Well Construction Details	Blow Count
		Sample No. Type
		Rock Formations, Sed. Color and Classifications, Observations (moleburs, etc.)

0.0 ft Ground Surface

5.0 ft

9.0 ft

11.5 ft

13.5 ft

16.59 ft

23.5 ft

E.O.B. 25 ft

Well Cap

Top of Casing (TOC)

Padlock

Concrete Collar (2 ft x 2 ft)

5 ft long Steel Protective Cover

Concrete Seal

Borehole = 6.25 inches O.D.

2 inch O.D. SCH 40 PVC Risers

Cement/Bentonite (SS) Grout

Hydrated Bentonite Chips

Top of Screened Interval

Filter Pack

2 inch O.D. SCH 40 PVC Screen 0.010 inch Factory Slotted

Two 4"x4"x8' Bumper Posts placed around well

• SS (split spoon) HS (hollow stem auger)

OBSERVATIONS	Date	9/16/92	10/20/93				
WATER LEVELS	Level	17.58	18.55				
Static Water Level Symbol v	Time	1230	0930				

SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

Boring/Well # MW-3	Facility Name MARLEY PUMP COMPANY	Facility Address 500 E. 59th ST. DAVENPORT, IOWA
Boring Depth (Feet) x Diameter (Inches) 25' x 6.25"	Drilling Method HOLLOW STEM AUGER	
Well Contractor INDECO INC	Logged by METCALF & EDDY	
Registration # I.D. 0007201	Date & Time Start 9/16/92 1330	Date & Time End 9/16/92 1450
	Ground Surface Elevation (ASL) 715.23'	Lust Number 8LTS84

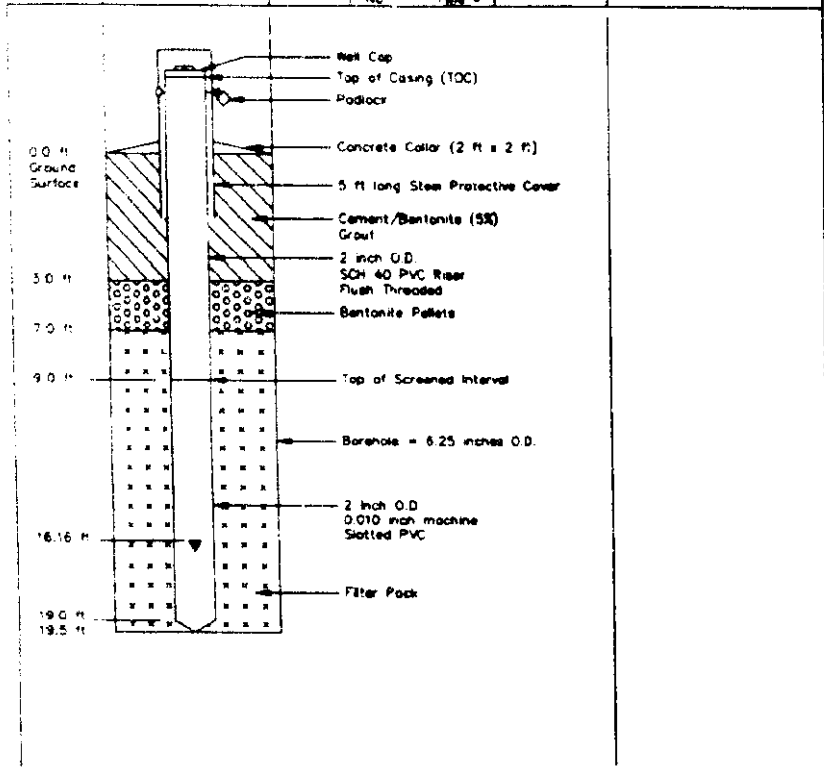
Depth in Feet	Well Construction Details	Blow Count	Sample No. Type =	PID/TIO Reading	Rock Formations, Soil Color and Classifications, Observations (moisture, etc.)
0.0 ft Ground Surface	Well Cap Top of Coating (TOC) Padlock				Three 4"x4"x8" Bumper Posts placed around well
	Concrete Cap (2 ft x 2 ft)				
	5 ft long Steel Protective Cover				
	Concrete Seal				
6.0 ft	2 inch O.D. SCH 40 PVC Riser				
	Hydrated Bentonite Chips				
9.0 ft	Top of Screened Interval				
11.0 ft	Borehole = 6.25 inches O.D.				
14.41 ft	Filter Pack				
21.0 ft	2 inch O.D. SCH 40 PVC Screen 0.010 inch Factory Slotted				
F.O.B. 25 ft					

• SS (split spoon) MS (hollow stem auger)

OBSERVATIONS	Date	9/16/92	10/29/92	5/25/94	1/8/94		
WATER LEVELS	Level	13.54	11.88	12.88	14.41		
Static Water Level Symbol =	Time	1450	0830	1050			

SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

Boring/Well # MW-4	Facility Name MARLEY PUMP COMPANY	Facility Address 500 E. 59th ST. DAVENPORT, IOWA
Boring Depth (Feet) x Diameter (Inches) 19.5' x 6.25"	Drilling Method HOLLOW STEM AUGER	
Well Contractor TERRACON CONSULTANTS	Logged by D. STORY METCALF & EDDY	
Registration # ID 40278	Date & Time Start 10/19/93 1340	Date & Time End 10/19/93 1505
	Ground Surface Elevation (ASL) 715.11'	Last Number BLTS84
Depth in Feet	Well Construction Details	Bore Count
		Sample No. Type =
		PID/TID Reading
		Rock Formations, Soil Color and Classifications, Observations (moisture, etc.)



= SS (silt spoon) MS (hollow stem auger)

OBSERVATIONS	Date	10/20/93					
WATER LEVELS	Level	16.16					
Static Water Level Symbol v	Time	0820					

SENECA Environmental Services Inc.

Project Maxlex Pump

Hole/Well No. BH1

Location Drydenport, Iowa

Borehole diameter 7.5

Job No. 8450

Total Depth of Hole 25.0 feet

Geologist/Engineer _____

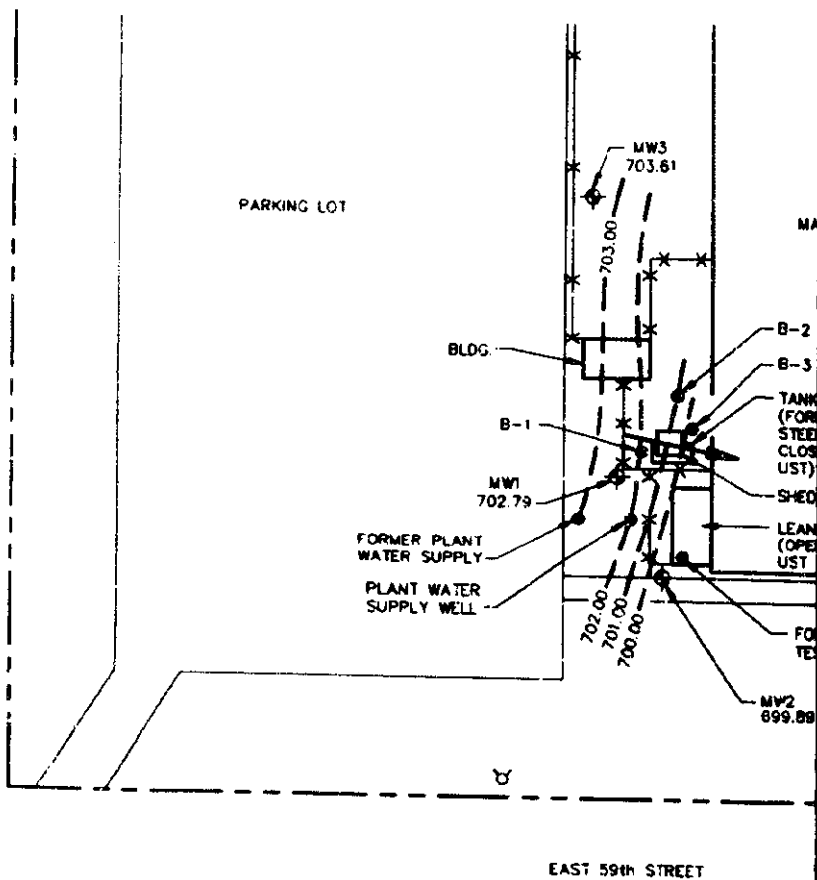
Depth to Water 20.0

Drill Crew White/Schubler

Date Completed 3/18/82

DEPTH IN FEET	WELL CONSTRUCTION DETAIL	DATE OF LOG	LOG TYPE	LITHOLOGY	DESCRIPTION
0				OL	Gravel - Topsoil
2				CL	Silty Clay, brown, no odor
4					
6					Silty Clay, slight odor, dark gray
8				ML	Clayey Silt, light gray, no odor
10					
12					Clayey Silt, light brown with fine grains of sand, no odor, damp
14					
16					
18				CL	Silty Clay, dark gray, embedded with fine to medium grained sand, no odor, damp
20	▽			CL	Clay, gray-green, wet, no odor
22					
24					
26					
28					
30					

Total Depth = 25.0 Feet
Soil Sample = 5-6-8H1, 8-7-8H1
8-14-8H1
Water Sample = 5-8H1





0 25 50 100



SCALE IN FEET

LEGEND

- — — — — = PROPERTY LINE
- 700.00 — = GROUNDWATER CONTOUR
- + — + — = FENCE
- ⊕ = FIRE HYDRANT
- ◆ = MONITORING WELL
- 703.61 = GROUNDWATER ELEVATION
- ⊙ B1 = SOIL BORING
- = WELL
- ← = APPARENT GROUNDWATER FLOW DIRECTION

MANUFACTURING BUILDING

PAD
OVER 500 gal.
GASOLINE
STOCKED IN PLACE

AUTO
HEATING
SYSTEM)

WATER
PUMP WELL

OFFICE BUILDING

NOTES:

ELEVATIONS WERE MEASURED AGAINST MEAN
SEA LEVEL.

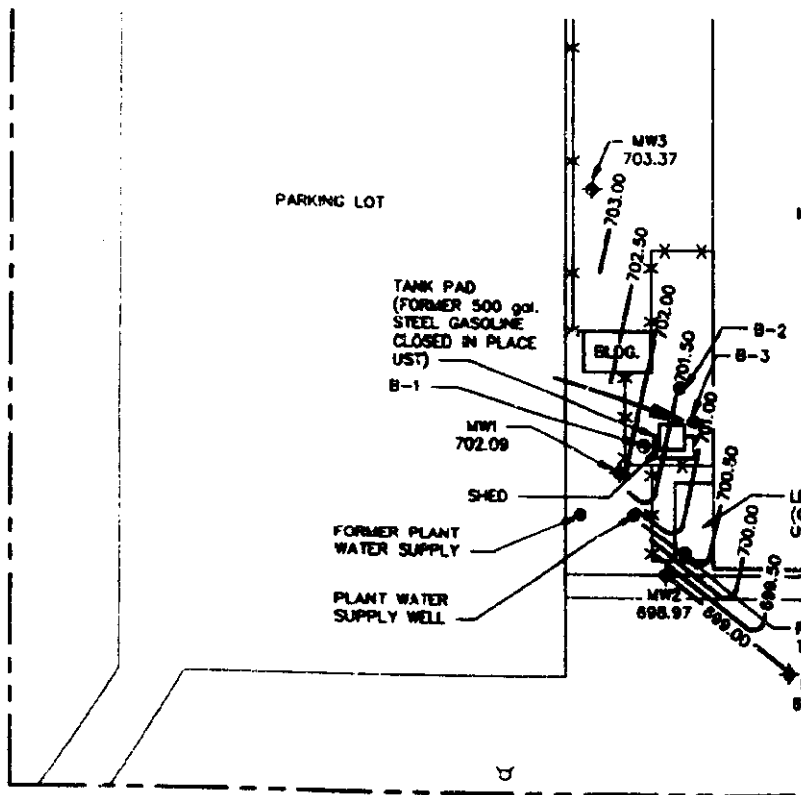
GROUNDWATER ELEVATION DATA COLLECTED
ON OCTOBER 16, 1992.

GROUNDWATER FLOW DIRECTION - EAST - SOUTHEAST

GROUNDWATER CONTOUR MAP

The Marley Pump Company
500 E. 58th Street
Davenport, Iowa

METCALF & EDDY



EAST 50th STREET



0 25 50 100



SCALE IN FEET

LEGEND

- -- -- -- = PROPERTY LINE
- 702.50 --- = GROUNDWATER CONTOUR
- +---+---+--- = FENCE
- ⊙ = FIRE HYDRANT
- ◆ MW3 = MONITORING WELL
- 703.37 = GROUNDWATER ELEVATION
- ⊙ B1 = SOIL BORING
- = WELL
- ← = APPARENT GROUNDWATER FLOW DIRECTION

MANUFACTURING BUILDING

MAN TO
OPERATING
POT SYSTEM)

FORMER
TEST WELL

MW4
68.95

OFFICE BUILDING

NOTES:

MW1, MW2, & MW3 WERE USED TO DETERMINE
HYDRAULIC CONDUCTIVITY.

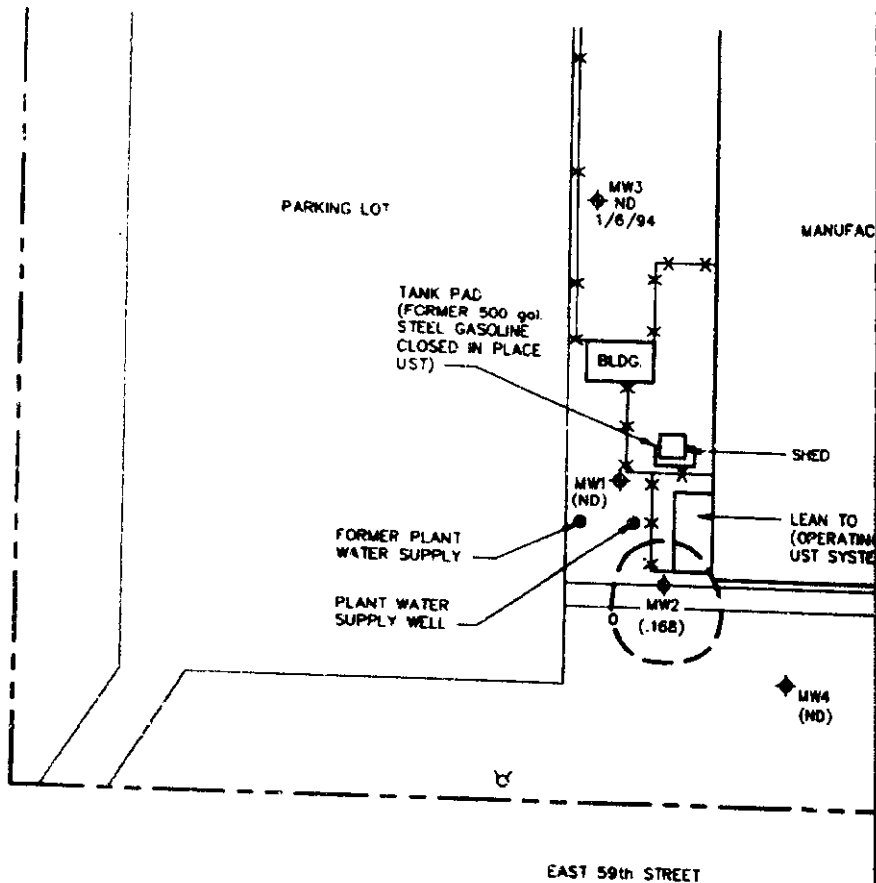
ELEVATIONS WERE MEASURED AGAINST MEAN
SEA LEVEL.

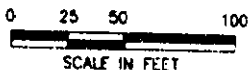
GROUNDWATER ELEVATION DATA COLLECTED
ON OCTOBER 20, 1993.

GROUNDWATER FLOW DIRECTION - EAST -
SOUTHEAST

GROUNDWATER CONTOUR MAP

The Marley Pump Company
500 E. 59th Street
Davenport, Iowa





LEGEND

- 0--- TRANSITIONAL ZONE AREA. "0" BOUNDARY = 0.005 mg/l
- - - - - PROPERTY LINE
- + + + + + FENCE
- ⊕ FIRE HYDRANT
- ◆ MW3 MONITORING WELL
- WELL
- ND NONE DETECTED
- (0079) UNITS IN mg/l
- J ESTIMATED VALUE CONCENTRATION BELOW LABORATORY DETECTION LIMIT

NOTES:

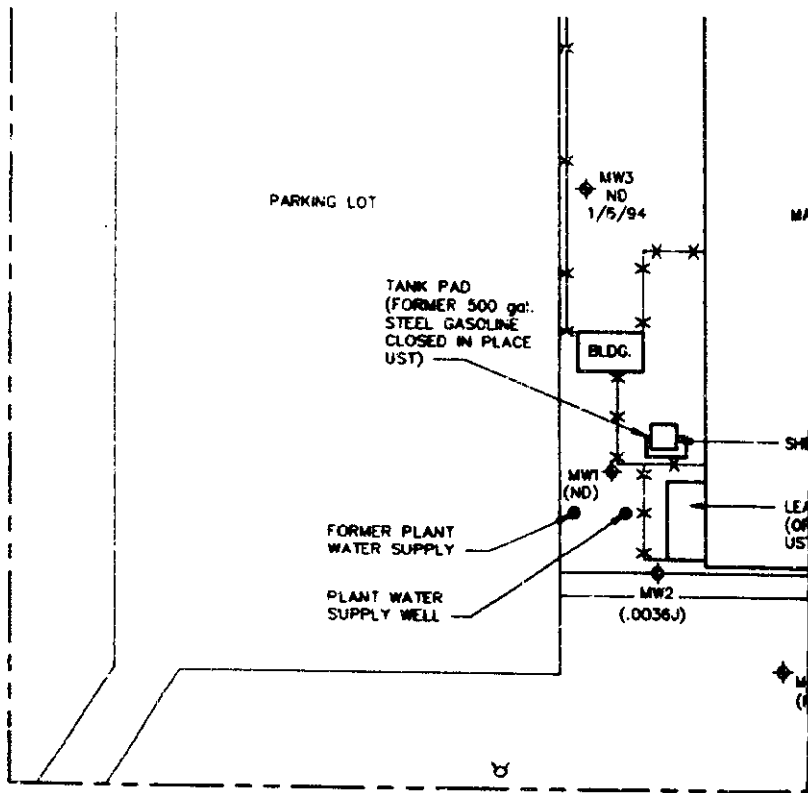
1. FREE PRODUCT NOT PRESENT
2. THIS MAP DEPICTS ONLY THOSE LEVELS THAT EXCEED THE IOWA STATE ACTION LEVEL FOR BENZENE - .005 mg/l. A PLUME MAP WAS INTERPOLATED FOR BENZENE.
3. DATA COLLECTED ON 10/20/93
4. MW-3 RE-SAMPLED ON 1/6/94
5. GROUNDWATER SAMPLE COLLECTED FROM MW-3 ON 1/6/94, INDICATED THAT BENZENE LEVELS FOR MW-3 COLLECTED ON 10/20/93 WAS NOT REPRESENTATIVE OF THE GROUNDWATER IN THE WELL'S VICINITY. NOW, DATA COLLECTED ON 10/1/92 AND 1/6/94 INDICATES THAT THE BENZENE IS NOT-DETECTED FOR THE WELL.

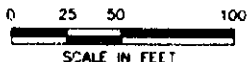
BENZENE GROUNDWATER CONTAMINATION PLUME MAP

The Marley Pump Company
500 E. 59th Street
Davenport, Iowa

URING BUILDING

OFFICE BUILDING





LEGEND

- = PROPERTY LINE
- +—+—+— = FENCE
- ⊕ = FIRE HYDRANT
- ⊕ MW3 = MONITORING WELL
- = WELL
- ND = NONE DETECTED
- (.0029) = UNITS IN mg/l
- J = ESTIMATED VALUE
CONCENTRATION BELOW
LABORATORY DETECTION
LIMIT

NOTES:

1. FREE PRODUCT NOT PRESENT
2. ETHYL BENZENE CONCENTRATIONS DID NOT EXCEED THE IOWA STATE ACTION LEVEL OF 12.0 mg/l OR THE LABORATORY DETECTION LIMIT. THUS, A PLUME MAP COULD NOT BE INTERPOLATED.
3. DATA COLLECTED ON 10/20/93
4. MW-3 RE-SAMPLED ON 1/6/94

ETHYL BENZENE GROUNDWATER CONTAMINATION PLUME MAP

The Marley Pump Company
500 E. 59th Street
Davenport, Iowa



0 25 50 100

SCALE IN FEET

LEGEND

- 0--- = TRANSITIONAL ZONE AREA, "0" BOUNDARY
- - - - - = PROPERTY LINE
- = FENCE
- ⌵ = FIRE HYDRANT
- ◆ MW3 = MONITORING WELL
- = WELL
- ND = NONE DETECTED
- (.0256) = UNITS IN mg/l
- J = ESTIMATED VALUE CONCENTRATION BELOW LABORATORY DETECTION LIMIT

NOTES:

1. FREE PRODUCT NOT PRESENT
2. TOLUENE LEVELS DID NOT EXCEED THE IOWA STATE ACTION LEVEL OF 2.42 mg/l. THUS, A CONTOUR MAP WAS INTERPOLATED.
3. DATA COLLECTED ON 10/20/93
4. MW-3 RE-SAMPLED ON 1/6/94

TOLUENE GROUNDWATER CONTAMINATION PLUME MAP

The Marley Pump Company
500 E. 59th Street
Davenport, Iowa

MANUFACTURING BUILDING

SHED

LEAN TO
(OPERATING
UST SYSTEM)

OFFICE BUILDING

◆ MW4
(ND)

PARKING LOT

TANK PAD
(FORMER 500 gal.
STEEL GASOLINE
CLOSED IN PLACE
UST)

FORMER PLANT
WATER SUPPLY

PLANT WATER
SUPPLY WELL

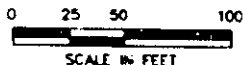
MW3
ND
1/6/94

BLDG.

MW1
(.0006.1)

MW2
C (.0218)

EAST 59th STREET



LEGEND

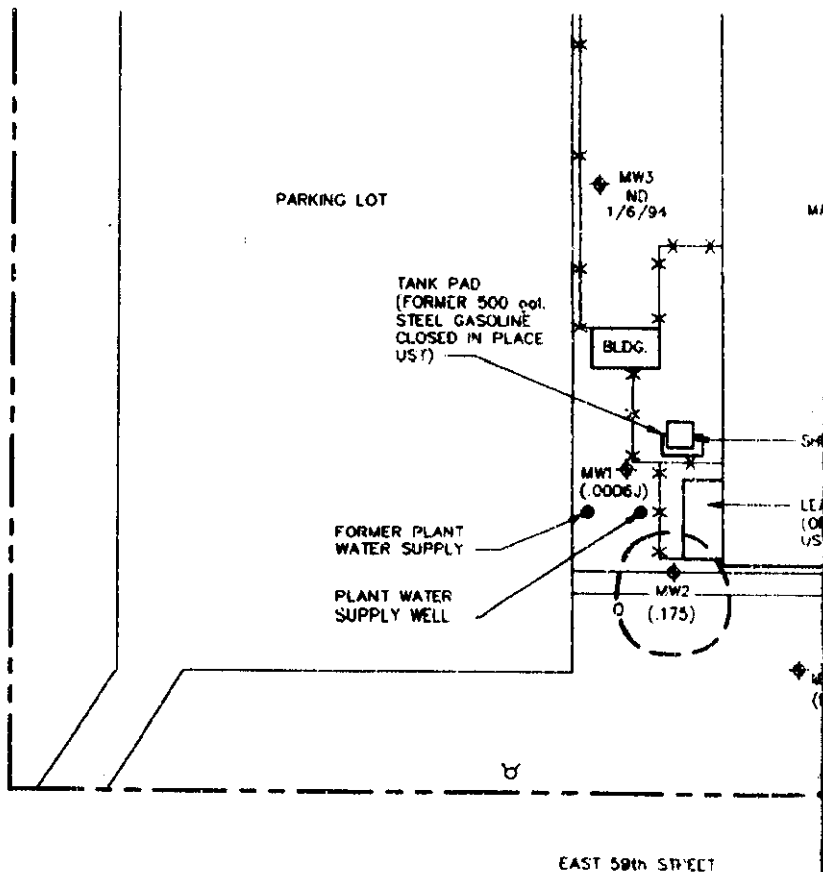
- 0 — = TRANSITIONAL ZONE
AREA "0" BOUNDARY
- - - - - = PROPERTY LINE
- · - · - = FENCE
- ⊕ = FIRE HYDRANT
- ◆ MW3 = MONITORING WELL
- = WELL
- ND = NONE DETECTED
- (.0061) = UNITS IN mg/l
- J = ESTIMATED VALUE
CONCENTRATION BELOW
LABORATORY DETECTION
LIMIT

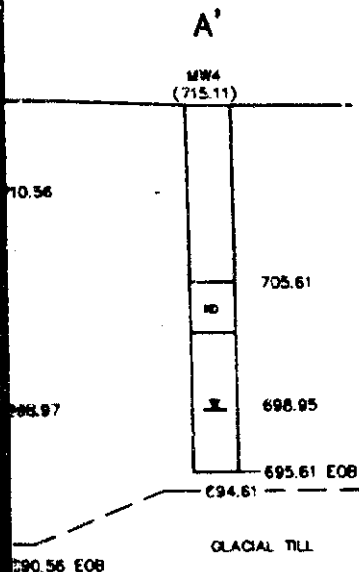
NOTES:

- 1 FREE PRODUCT NOT PRESENT
- 2 XYLENE CONCENTRATIONS DID NOT EXCEED
THE IOWA STATE ACTION LEVEL OF
.7 mg/l. THUS, A PLUME MAP WAS
INTERPOLATED.
- 3 DATA COLLECTED ON 10/20/93
- 4 NW-3 RE-SAMPLED ON 1/6/94

XYLENE GROUNDWATER CONTAMINATION PLUME MAP

The Marley Pump Company
500 E. 58th Street
Davenport, Iowa





HORIZONTAL

SCALE IN FEET

LEGEND

CL = INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVEL, SANDS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS.

ML = INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS.

▼ = GROUNDWATER ELEVATION DATA COLLECTED OCTOBER 20, 1993

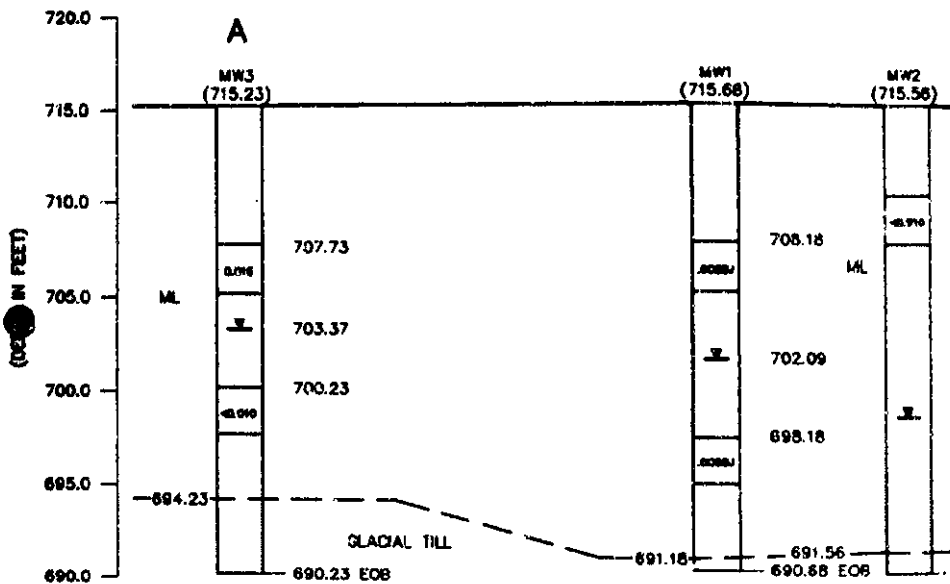
0.00885 → SOIL CONTAMINANT LEVEL TPH IN ppm

— 695.61 EOB = ELEVATION END OF BORING

ELEVATIONS ARE BASED UPON MEAN SEA LEVEL

HYDROGEOLOGICAL CROSS SECTION

The Marley Pump Company
500 E. 58th Street
Davenport, Iowa



APPENDIX VIII RECEPTOR SURVEY MAP NARRATIVE

Surface Water Body Survey

After evaluating the U.S.G.S. 7.5 minute quadrangle and conducting a site survey, surface water bodies such as streams, lakes, and/or ponds are not located within 1,000 feet of the designated petroleum impacted area. The closest surface water body, Goose Creek, is greater than 1,000 feet from the impacted area. Furthermore, at an average rate of $K = 2.61$ m/year, it would take over 100 years to reach Goose Creek.

Given the distance of the surface water body from the impacted area and the hydraulic conductivity buildup tests conducted on all three monitoring wells (MW-1: 0.00674 m/day, MW-2: 0.00804 m/day, and MW-3: 0.0583 m/day), the impacted area is believed to be very localized. Therefore, it is not anticipated that any surface water body will be affected. Furthermore, it is not anticipated that any surface water body sampling will be conducted.

Conduit Survey

Seneca Environmental Services (April 1992) had stated in their environmental report that a large metal pipe ran through the new UST tank pit excavation. This metal pipe ran from the water well, located approximately 20-feet west of the tank pit excavation, toward the manufacturing building (east). Seneca stated that the pipe is buried approximately two-feet below the surface and is set directly in the clay soils. Sand backfill does not exist around the metal pipe. The pipe is situated at a level above the midline of the proposed USTs. Seneca had indicated that it was not likely that this pipe will act as a conduit for any hydrocarbon migration if a leak occurred in one of the underground storage tanks. The tanks are made of double-walled construction.

A four-inch diameter steel/plastic natural gas main (60 lbs) is buried approximately four feet below grade and runs into a natural gas main located on the south side of 59th Street. This pipe runs in a north-south direction. The buried line is located directly west of the new UST testing facility's above ground piping and the closed-in-place UST. The distance the natural gas line is from the closed-in-place UST cannot be discerned because the Marley Pump maps do not state such information. Two natural gas lines, a 16-inch steel (400 lbs) and an eight-inch plastic (30 lbs), are located approximately 420 feet north of the closed-in-place UST. The backfill for this buried pipeline is gravel and native soil.

A six-inch diameter cast iron water main is buried approximately 5 feet below grade and runs north-south. This buried line is located west of the steel gas main and directly south of the closed-in-place UST. This water main connects to a fire hydrant located east of the UST. The backfill for this line is gravel and native soil.

A ten-inch diameter concrete roof drain (storm sewer) is buried two-feet below grade and runs north-south and east-west. The east-west extension of this line intersects the new underground

storage facility between tanks 2 and 3. The north/south extension of the storm sewer is located directly east of Tanks 2 and 3. These drain extension are confined to the new UST testing area. The backfill is anticipated to be gravel and native soil.

A storm sewer clean-out is located at the southwest corner of the testing area. A draining trough is located at the southern end of the testing area. The depth and construction of this trough are unknown.

A buried telephone cable is located west of the facility and runs northwest-southeast and east-west. The depth at which this cable is buried is approximately 30 - 36 inches below grade. The backfill for this cable is native soil.

Several electric lines are buried on the property or near the property boundary. A 69,000 volt electric line is buried approximately 4 feet deep and is located on the north side of the property boundary. This line runs into the east-west. Additional electric lines run into the west side of the property toward the process building. Each line carries approximately 13,000 volts. The backfill is native soil.

A sewer (clay/concrete) line is located on the north side of 59th street and is buried approximately 8 feet below grade. Gravel and native soil are used as backfill.

The depth at which all the aforementioned lines are buried are not affected by fluctuating groundwater levels. The groundwater at this site ranges from approximately 11 feet below grade to 18 feet below grade.

A PID and CGI survey was conducted in an accessible area - the manhole for the pump house located in the southwest corner of the site. The PID and CGI survey did not detect any noticeable vapors. Therefore, vapors were not present. Survey of other utilities were not conducted because they were inaccessible. Open trenches or excavation were not present to gather vapor survey data.

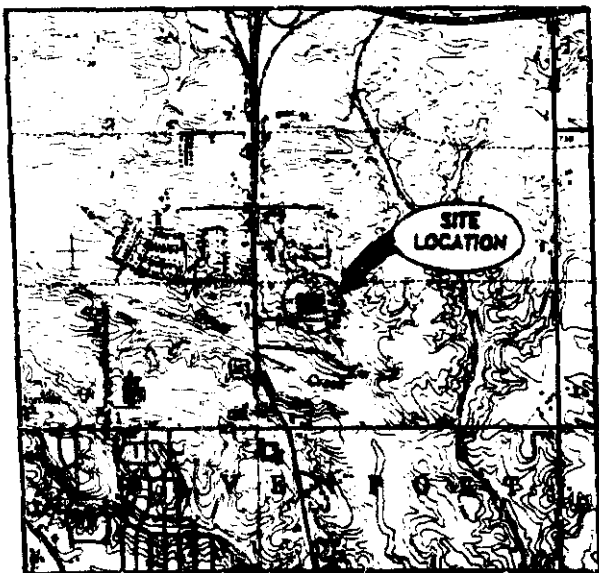
The utilities, at their maximum depth, are approximately 8 feet below grade. The groundwater level at the site ranges from 11 feet (MW-3) to 18 feet (MW-2 and MW-4). Since the utility trenches are located above the water table, the utility trenches will not act as a conduit to the subsurface.

Laboratory analysis for soil samples from on-site borings did not exceed IDNR's regulatory action level. This has been evident from the soil samples collected from boring drilled near utilities: B-1, B-2, B-3, MW-1, MW-2, and MW-4. Based upon the analytical data, soil type, and groundwater levels, it is unlikely that the utilities are impaired or affected.

Conduit Table

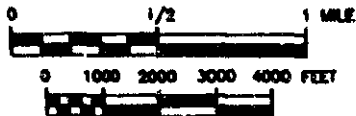
Conduit/ Confined Space	Backfill Material	Slope of Trench	Depth of Trench	Groundwater Level
Natural Gas	Gravel Native	None	42"	11 - 18'
Water	Gravel Native	None, Forced Main	60"	11 - 18'
Roof Drain (Storm Sewer)	Gravel Native	Not Avail.	24"	11 - 18'
Storm Sewer Clean Out	Unknown	Not Avail.	Unknown	11 - 18'
Telephone Cable	Native	None	30-36"	11 - 18'
Electric	Native	None	42"	11 - 18'
Sewer	Gravel Native	0.4	96"	11 - 18'
Pumphouse	Unknown	Not Avail.	Approx. 96"	11 - 18'

Trench Depths are approximate and are based on discussions with representatives from the appropriate utility.



SOURCE: U.S.G.S. DAVENPORT EAST, IOWA - ILL. (1975)

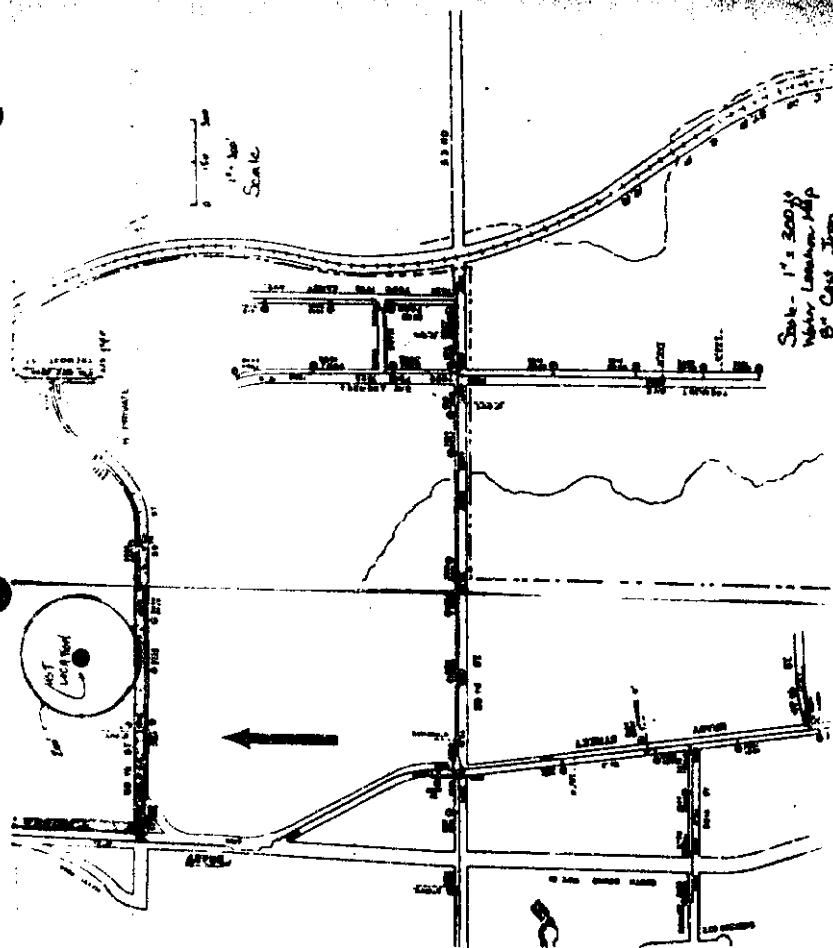
SCALE: 1:24000



RECEPTOR SURVEY MAP **SURFACE WATER BODY SURVEY**

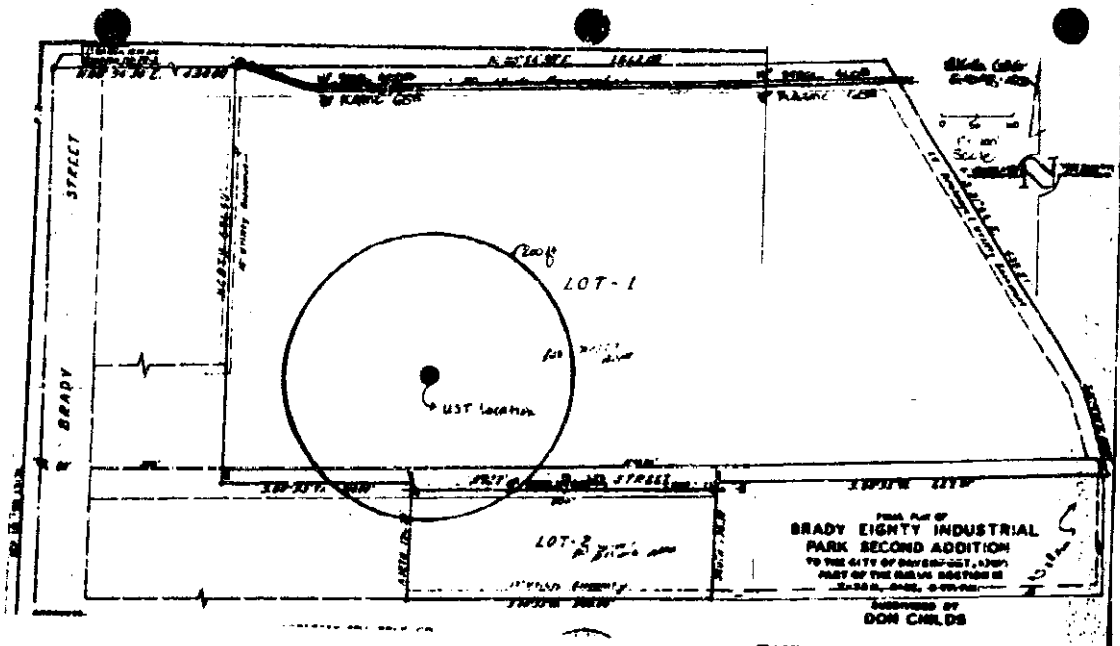
The Morley Pump Company
500 E. 59th Street
Davenport, Iowa

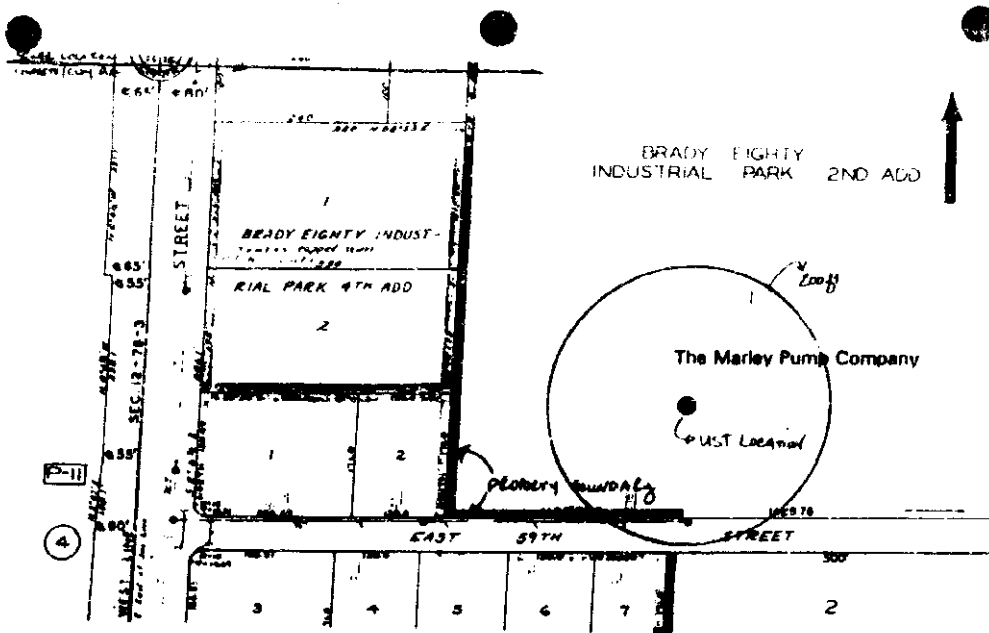
METCALF & EDDY



RECEPTOR SURVEY MAP CONDUIT SURVEY

The Marley Pump Company
500 E. 59th Street
Davenport, Iowa
(Water - Cast Iron)

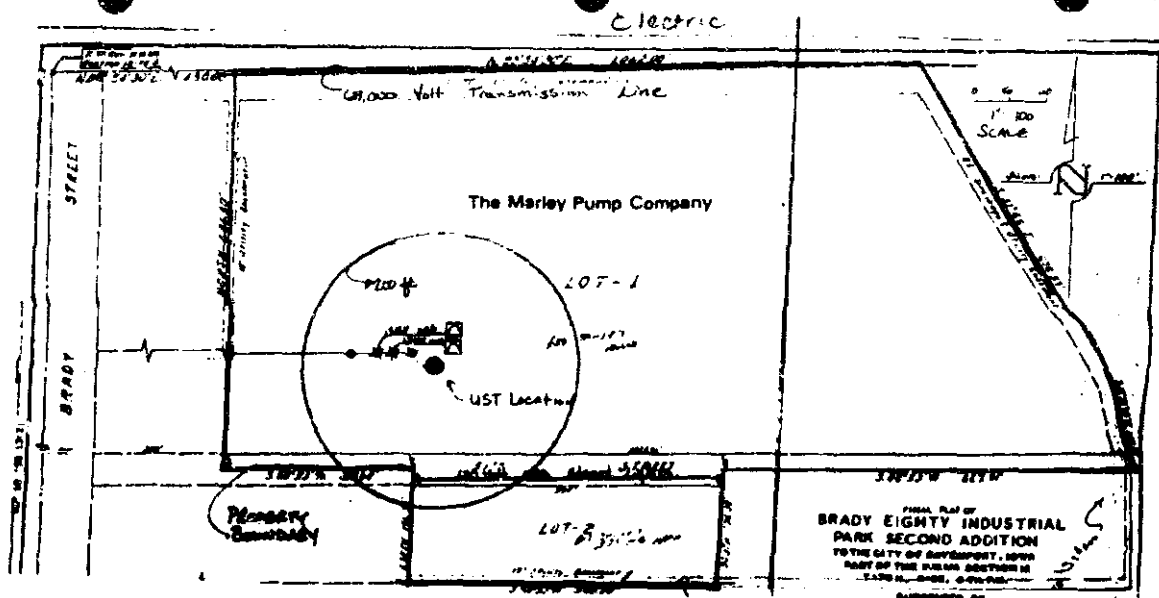




**RECEPTOR SURVEY MAP
CONDUIT SURVEY**

The Marley Pump Company
500 E. 59th Street
Davenport, Iowa
(Sewer - Clay/Concrete Piping)

0 100 200
1" = 100'
SCALE



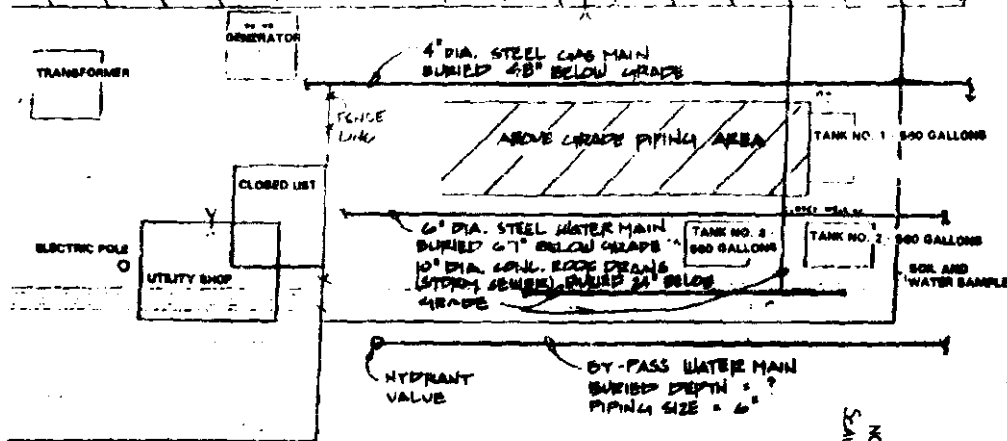
**RECEPTOR SURVEY MAP
CONDUIT SURVEY**

The Marley Pump Company
500 E. 59th Street
Des Moines, Iowa
(Electric)

SW CORNER OF FACILITY

RECEPTOR SURVEY MAP CONDUIT SURVEY

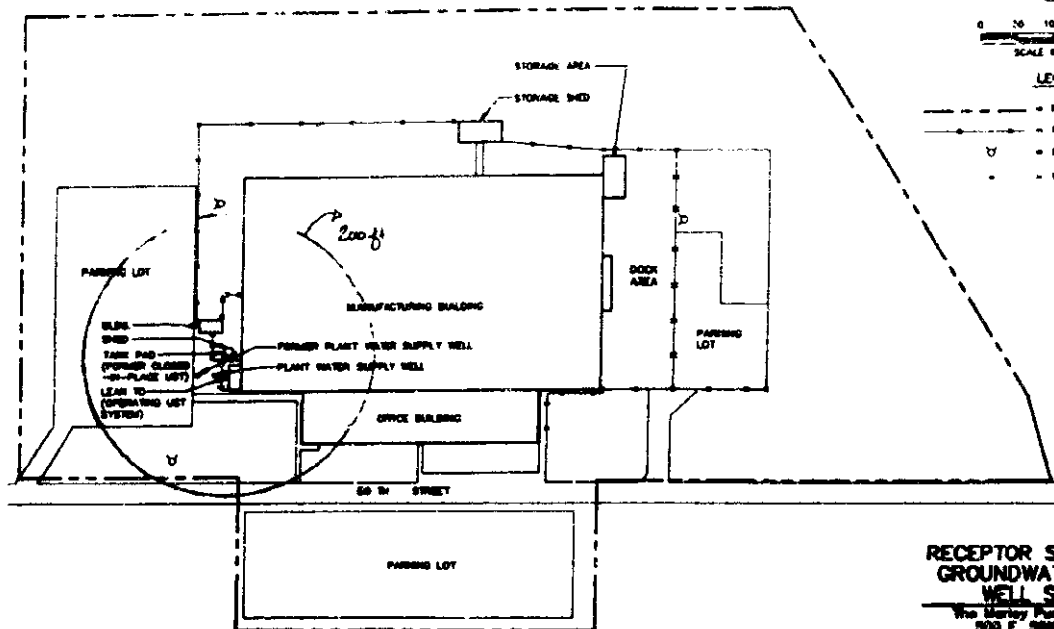
The Morley Pump Company
300 E. 59th Street
Davenport, Iowa



PLANT WATER SYSTEM
DRILLING AND PROCESS USE
APPROX. 250' DEEP

NOT TO SCALE
SCALE NOT AVAILABLE





RECEPTOR SURVEY MAP GROUNDWATER WATER WELL SURVEY

We Morley Pump Company
500 E. 50th Street
Des Moines, Iowa

APPENDIX VIII GROUNDWATER WELL SURVEY AND GROUNDWATER BARRIERS SURVEY

Groundwater Well Survey

Three deep wells exist on-site: former plant water supply well, plant water supply well, and a former test well. Please refer to the "Overall Site Plan Map" for further details.

- Former plant water supply well - Well logs are not available for this water supply well. This well used to supply water to the plant for its operations. However, it is currently not in service. This well is not plugged. The depth of this well is approximately 240 feet below grade. This well is located approximately 20 feet west of the testing facility lean-to.
- Water supply well - Well logs are not available for this water supply well. This well currently supplies water to the plant for all purposes: industrial and drinking. The depth of this well is approximately 240 feet below grade. This well is located approximately 5-feet west from the new testing facility lean-to.
- Test well - A 6-inch diameter, 200-foot deep test well was drilled on the facility property in 1979. The well was used to test Marley Pump Company's jet pumps. This well is located in the new UST testing facility and is not closed.

The owner of all three wells is the Marley Pump Company located at 500 East 59th Street, Davenport, Iowa.

There are no off-site wells within 1,000 feet of the UST.

Groundwater Barriers Survey

Potential Groundwater Barriers:

Parking Lots: Located 40 feet west of the testing facility lean-to, 650 feet east of the testing facility lean-to, and approximately 180 feet south of the testing facility lean-to.

Building Foundation: The building foundation for this facility is approximately 3.5 feet below grade and is located east of the UST. This does not pose a barrier for groundwater because groundwater, as measured in the four groundwater monitoring wells, ranges from approximately 11 feet to 18 feet below grade.

UST Testing Facility: The depth of the testing facility is approximately 7-feet below grade. This does not pose as a groundwater barrier problem because groundwater levels, as measured in the four monitoring wells, ranged from 11 feet below grade to 18 feet below grade.

Buried Conduit: The depth of the conduit varies from 2' - 8'. Many utilities are located in the area the UST. As previously stated, groundwater levels range from 11' - 18' below grade. Therefore, the conduits do not act as barriers to the groundwater.

East 59th Street: This street is located approximately 130 feet south of the UST and does not pose as a groundwater barrier for the impacted area.

The barriers to groundwater are shallower (2' - 8') than the depth to groundwater (11' - 18'). Therefore, these barriers may influence the way water infiltrates to the groundwater, but, they will not impede the groundwater flow direction.

SOIL ANALYTICAL DATA - METCALF & EDDY, INC

MW 1, 7.5' - 10'	TPH - 8.8 UG/KG
MW 2, 17.5' - 20'	TPH - 6.8 UG/KG
MW 2, 5' - 7.5'	TPH - ND
MW 3, 7.5' - 10'	TPH - 16.6 UG/KG
MW 3, 15' - 17.5'	TPH - ND
MW 3, 15' - 17.5'	TPH - ND

(SAMPLES COLLECTED ON 9/16/92)

SOIL ANALYTICAL DATA - METCALF & EDDY, INC

B-1, 4'-6', Benzene - ND	B-1, 4'-6', Toluene - ND	B-1, 4'-6', Ethylbenzene - ND	B-1, 4'-6', Xylenes - ND	B-1, 4'-6', TPH - 13.8 ug/kg
B-2, 6' - 8', Benzene - ND	B-2, 6' - 8', Toluene - ND	B-2, 6' - 8', Ethylbenzene - ND	B-2, 6' - 8', Xylenes - ND	B-2, 6' - 8', TPH - ND
B-3, 4'-6', Benzene - ND	B-3, 6' - 8', Toluene - 0.6J	B-3, 6' - 8', Ethylbenzene - ND	B-3, 6' - 8', Xylenes - ND	B-2, 6' - 8', TPH - 13 ug/kg
MW-4, 9.5' - 11.5' Benzene - ND	MW-4, 9.5' - 11.5' Toluene - ND	MW-4, 9.5' - 11.5' Ethylbenzene - ND	MW-4, 9.5' - 11.5' Xylenes - ND	MW-4, 9.5' - 11.5' TPH - ND

(SAMPLES COLLECTED ON OCTOBER 19, 1993)

SOIL ANALYTICAL DATA - SENECA ENVIRONMENTAL SERVICES

BH-1, BENZENE - < 0.5 UG/G	BH-1, ETHYL BENZENE - < 0.5 UG/G	BH-1, TOLUENE - < 0.5 UG/G	BH-1, XYLENES - < 0.5 UG/G	BH-1, TPH - < 10 UG/G
-------------------------------	-------------------------------------	-------------------------------	-------------------------------	--------------------------

(SAMPLES COLLECTED ON 3/11/93)

WATER ANALYTICAL DATA - METCALF & EDDY, INC.

MW-1, BENZENE - ND UG/L	MW-1, ETHYLBENZENE - ND UG/L	MW-1, TOLUENE - ND UG/L	MW-1, XYLENES - ND UG/L	MW-1, TPH - 18.3 UG/L
MW-2, BENZENE - 748 UG/L	MW-2, ETHYLBENZENE - 322 UG/L	MW-2, TOLUENE - 42.0 UG/L	MW-2, XYLENES - 83.6 UG/L	MW-2, TPH - 2500 UG/L
MW-3, BENZENE - ND UG/L	MW-3, ETHYLBENZENE - ND UG/L	MW-3, TOLUENE - 22.2 UG/L	MW-3, XYLENES - 2.87 UG/L	MW-3, TPH - ND UG/L
MW-3D, BENZENE - ND UG/L	MW-3, ETHYLBENZENE - ND UG/L	MW-3D, TOLUENE - 25.1 UG/L	MW-3D, XYLENES - ND UG/L	MW-3, TPH - ND UG/L
RMSATE, BENZENE - ND UG/L	RMSATE, ETHYLBENZENE - ND UG/L	RMSATE, TOLUENE - ND UG/L	RMSATE, XYLENES - 0.51 UG/L	RMSATE, TPH - ND UG/L

SAMPLES COLLECTED ON (6/95)

WATER ANALYTICAL DATA - METCALF & EDDY, INC.

MW-1, BENZENE - ND UG/L	MW-1, ETHYLBENZENE - ND UG/L	MW-1, TOLUENE - 0.61 UG/L	MW-1, XYLENES - 0.61 UG/L	MW-1, TPH - ND UG/L
MW-2, BENZENE - 168 UG/L	MW-2, ETHYLBENZENE - 3.61 UG/L	MW-2, TOLUENE - 21.8 UG/L	MW-2, XYLENES - 175 UG/L	MW-2, TPH - 881 UG/L
MW-3, BENZENE - 7.9 UG/L	MW-3, ETHYLBENZENE - 2.9 UG/L	MW-3, TOLUENE - 25.6 UG/L	MW-3, XYLENES - 6.1 UG/L	MW-3, TPH - 177 UG/L
MW-4, BENZENE - ND UG/L	MW-4, ETHYLBENZENE - ND UG/L	MW-4, TOLUENE - ND UG/L	MW-4, XYLENES - ND UG/L	MW-4, TPH - ND UG/L
MW-4D, BENZENE - ND UG/L	MW-4D, ETHYLBENZENE - ND UG/L	MW-4D, TOLUENE - ND UG/L	MW-4D, XYLENES - ND	MW-4D, TPH - ND UG/L

SAMPLES COLLECTED ON OCTOBER 26, 1993

WATER ANALYTICAL DATA - SENECA ENVIRONMENTAL SERVICES

BH-1, BENZENE - 0.61 MG/L	BH-1, ETHYLBENZENE - 0.25 MG/L	BH-1, TOLUENE - 0.29 MG/L	BH-1, XYLENES - 0.25 MG/L	BH-1, TPH - 3.7 MG/L
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WATER ANALYTICAL - METCALF & EDDY, INC., JANUARY 6, 1994 RE-SAMPLING OF MW-3

BENZENE - < 10 UG/L	ETHYLBENZENE - < 10 UG/L	TOLUENE - 15 UG/L	XYLENES - < 10 UG/L	TTL HYDROCARBONS - 12 MG/L
------------------------	-----------------------------	----------------------	------------------------	-------------------------------

WATER ANALYTICAL - MARLEY PUMP COMPANY, MAY 10, 1994 - SAMPLING OF ON SITE WELL FOR
VOLATILE ORGANICS

TRICHLOROETHYLENE	<0.001 PPM
TRICHLOROETHANE	<0.001 PPM

SENECA ENVIRONMENTAL SERVICES, INC.
SOIL AND GROUNDWATER LABORATORY ANALYTICAL DATA

NET**NATIONAL
ENVIRONMENTAL
TESTING, INC.**NET Midwest, Inc.
Cedar Falls Division
704 Shakespeare Drive
P.O. Box 888
Cedar Falls, IA 50613
Tel (319) 277-3001
Fax (319) 277-2428**ANALYTICAL REPORT**Ms. Heather Morton-Davis
SENECA ENVIRONMENTAL SERV.
5113 Tremont Avenue
Davenport, IA 52807

03/30/1992

Sample No.: 143005
Job Number: 92.2095Sample Description: S-7 BR-1 Marley Pump
SOIL

Date Taken: 03/13/1992


Date Received: 03/19/1992

Parameter	Result	Units	Date Analyzed/Analyst
Total Extractable Hydrocarbons	<10.	ug/g	03/27/1992 blk
VOLATILES - BTEN (NONAQUEOUS)			
Benzene	<0.5	ug/g	03/24/1992 mkk
Ethylbenzene	<0.5	ug/g	03/24/1992 mkk
Toluene	<0.5	ug/g	03/24/1992 mkk
Xylenes, Total	<0.5	ug/g	03/24/1992 mkk
Total Hydrocarbons	<10.	ug/g	03/24/1992 mkk

Sample introduction performed in reference to EPA Method 8030 (purge & trap). Analysis performed in reference to EPA Method 8015 for volatile organics using flame ionization detection. (Iowa Method OA-1, Revision 7/01/91).

Method Detection Limits: Benzene <0.5 ug/g; Toluene <0.5 ug/g; Xylenes, Total <0.5 ug/g; Total Hydrocarbons <10. ug/g; Ethyl Benzene <0.5 ug/g.

Extractable Hydrocarbons are extracted in accordance with EPA Method 3550 (sonication extraction). Analysis is performed in reference to EPA Method 8100 using flame ionization detection. (Iowa Method OA-2, Revision 7/01/91). Method Detection Limit <10. ug/g


R. L. Sindert
Project Manager**received**
ANGL

NET**NATIONAL
ENVIRONMENTAL
TESTING, INC.**NET Midwest, Inc.
Cedar Falls Division
704 Enterprise Drive
P.O. Box 826
Cedar Falls, IA 50613
Tel: (319) 277-3401
Fax: (319) 277-3422**ANALYTICAL REPORT**Ms. Heather Morten-Davis
SENECA ENVIRONMENTAL SERV.
5113 Tremont Avenue
Davenport, IA 52807

03/30/1992

Sample No.: 163006
Job Number: 92.2095Sample Description: W-8d1 Marley Pump
WATER


Date Taken: 03/18/1992

Date Received: 03/19/1992

	Result	Units	Date Analyzed/Analyst
VOLATILES - BTEX (WATER)			
Benzene	0.61	mg/L	03/20/1992 aka
Ethylbenzene	0.25	mg/L	03/20/1992 aka
Toluene	0.29	mg/L	03/20/1992 aka
Xylenes, Total	0.25	mg/L	03/20/1992 aka
Total Hydrocarbons	1.7	mg/L	03/20/1992 aka

Sample introduction performed in reference to EPA Method 8030 (purge and trap). Analysis performed in reference to EPA Method 8015 for volatile organics using flame ionization detection. (Iowa Method OA-1, Revision 7/01/91).

Method Detection Limits: Benzene <0.002 mg/L; Toluene <0.002 mg/L;
Xylenes, Total <0.002 mg/L; Ethyl Benzene <0.002 mg/L
Total Hydrocarbons <8.10 mg/L.


R. L. Bindert
Project Manager

METCALF & EDDY, INC
SOIL AND GROUNDWATER LABORATORY ANALYTICAL DATA
ROUND 1 - SEPTEMBER/OCTOBER 1992

SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2590

CLIENT: METCALF & EDDY
1 PIERCE PLAZA, SUITE 1500 WEST
ITASCA ILL 60143
ATTN: DENNIS STOREY

REPORT: 11079.0171

DATE: 09-25-92

SAMPLE MATRIX: SOIL
TALL # 11179.1
METHOD REFERENCE: EPA
DATE SAMPLED: 09-15-92
DATE SUBMITTED: 09-16-92
DATE ANALYZED: 09-23-92
ANALYST: MARILYN ROMA
SAMPLE ID: MW-1 7.5L

PARAMETER	DET. LIMIT	UNIT	RESULTS
<u>TOTAL FUSIBLE PETROLEUM HYDROCARBONS</u>			
GASOLINE	10.0	ug/kg	8.8 J

QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 88%

- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2258 • FAX: 918-251-2599

REPORT: 11078.0211

DATE: 09-25-92

[illegible]

PARAMETER	DET. LIMIT	UNIT	RESULTS
<u>100% 1,1-DICHLOROETHYLENE HYDROCARBONS</u>			
DBP (DM)	10.0	ug/kg	6.8 J

QA/QC SURROGATE RECOVERY

1. IN RE: MURDER OF MARTIN LUTHER KING, JR. 217

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ND  = NOT DETECTED ABOVE QUANTITATION LIMIT
E   = COMPOUND FOUND IN BLANK, AS WELL AS SAMPLE
L   = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
I   = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

```

SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Adams • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-1509

CLIENT: METCALF & EDDY
1 PIERCE PLAZA, SUITE 1500 WEST
ITASCA ILL 60143
ATTN: DENNIS STOEKEY

REPORT: 11078.03TI

DATE: 09-23-92

SAMPLE MATRIX: SOIL
INSTRUMENT: 11078.03
METHOD REFERENCE: EPA-81
DATE SAMPLED: 09-14-92
DATE RECEIVED: 09-23-92
ANALYST: J. L. HARRIS
LABORATORY: SOUTHWEST LABORATORY
SAMPLE ID: MW-1-5-15

PARAMETER	DET. LIMIT	UNIT	RESULTS
<u>TOTAL AROMATIC PETROLEUM HYDROCARBONS</u>			
GASOLINE	10.0	ug/kg	ND

QA/QC SURROGATE RECOVERY

4-BROMOPYRENE 97%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT
B = BLANK FOUND IN BLANK AS WELL AS SAMPLE
Q = QUANTIFIED CONCENTRATION BELOW LIMIT OF QUANTITATION
I = INABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2590

REPORT: 11078.04TI

DATE: 09-25-92

1. NAME: [REDACTED]
 2. DATE: [REDACTED]
 3. TIME: [REDACTED]
 4. LOCATION: [REDACTED]
 5. REASON: [REDACTED]
 6. WITNESSES: [REDACTED]
 7. REMARKS: [REDACTED]
 8. SIGNATURE: [REDACTED]
 9. DATE: [REDACTED]
 10. TIME: [REDACTED]
 11. LOCATION: [REDACTED]
 12. REASON: [REDACTED]
 13. WITNESSES: [REDACTED]
 14. REMARKS: [REDACTED]
 15. SIGNATURE: [REDACTED]
 16. DATE: [REDACTED]
 17. TIME: [REDACTED]
 18. LOCATION: [REDACTED]
 19. REASON: [REDACTED]
 20. WITNESSES: [REDACTED]
 21. REMARKS: [REDACTED]
 22. SIGNATURE: [REDACTED]
 23. DATE: [REDACTED]
 24. TIME: [REDACTED]
 25. LOCATION: [REDACTED]
 26. REASON: [REDACTED]
 27. WITNESSES: [REDACTED]
 28. REMARKS: [REDACTED]
 29. SIGNATURE: [REDACTED]
 30. DATE: [REDACTED]
 31. TIME: [REDACTED]
 32. LOCATION: [REDACTED]
 33. REASON: [REDACTED]
 34. WITNESSES: [REDACTED]
 35. REMARKS: [REDACTED]
 36. SIGNATURE: [REDACTED]
 37. DATE: [REDACTED]
 38. TIME: [REDACTED]
 39. LOCATION: [REDACTED]
 40. REASON: [REDACTED]
 41. WITNESSES: [REDACTED]
 42. REMARKS: [REDACTED]
 43. SIGNATURE: [REDACTED]
 44. DATE: [REDACTED]
 45. TIME: [REDACTED]
 46. LOCATION: [REDACTED]
 47. REASON: [REDACTED]
 48. WITNESSES: [REDACTED]
 49. REMARKS: [REDACTED]
 50. SIGNATURE: [REDACTED]
 51. DATE: [REDACTED]
 52. TIME: [REDACTED]
 53. LOCATION: [REDACTED]
 54. REASON: [REDACTED]
 55. WITNESSES: [REDACTED]
 56. REMARKS: [REDACTED]
 57. SIGNATURE: [REDACTED]
 58. DATE: [REDACTED]
 59. TIME: [REDACTED]
 60. LOCATION: [REDACTED]
 61. REASON: [REDACTED]
 62. WITNESSES: [REDACTED]
 63. REMARKS: [REDACTED]
 64. SIGNATURE: [REDACTED]
 65. DATE: [REDACTED]
 66. TIME: [REDACTED]
 67. LOCATION: [REDACTED]
 68. REASON: [REDACTED]
 69. WITNESSES: [REDACTED]
 70. REMARKS: [REDACTED]
 71. SIGNATURE: [REDACTED]
 72. DATE: [REDACTED]
 73. TIME: [REDACTED]
 74. LOCATION: [REDACTED]
 75. REASON: [REDACTED]
 76. WITNESSES: [REDACTED]
 77. REMARKS: [REDACTED]
 78. SIGNATURE: [REDACTED]
 79. DATE: [REDACTED]
 80. TIME: [REDACTED]
 81. LOCATION: [REDACTED]
 82. REASON: [REDACTED]
 83. WITNESSES: [REDACTED]
 84. REMARKS: [REDACTED]
 85. SIGNATURE: [REDACTED]
 86. DATE: [REDACTED]
 87. TIME: [REDACTED]
 88. LOCATION: [REDACTED]
 89. REASON: [REDACTED]
 90. WITNESSES: [REDACTED]
 91. REMARKS: [REDACTED]
 92. SIGNATURE: [REDACTED]
 93. DATE: [REDACTED]
 94. TIME: [REDACTED]
 95. LOCATION: [REDACTED]
 96. REASON: [REDACTED]
 97. WITNESSES: [REDACTED]
 98. REMARKS: [REDACTED]
 99. SIGNATURE: [REDACTED]
 100. DATE: [REDACTED]
 101. TIME: [REDACTED]
 102. LOCATION: [REDACTED]
 103. REASON: [REDACTED]
 104. WITNESSES: [REDACTED]
 105. REMARKS: [REDACTED]
 106. SIGNATURE: [REDACTED]
 107. DATE: [REDACTED]
 108. TIME: [REDACTED]
 109. LOCATION: [REDACTED]
 110. REASON: [REDACTED]
 111. WITNESSES: [REDACTED]
 112. REMARKS: [REDACTED]
 113. SIGNATURE: [REDACTED]
 114. DATE: [REDACTED]
 115. TIME: [REDACTED]
 116. LOCATION: [REDACTED]
 117. REASON: [REDACTED]
 118. WITNESSES: [REDACTED]
 119. REMARKS: [REDACTED]
 120. SIGNATURE: [REDACTED]
 121. DATE: [REDACTED]
 122. TIME: [REDACTED]
 123. LOCATION: [REDACTED]
 124. REASON: [REDACTED]
 125. WITNESSES: [REDACTED]
 126. REMARKS: [REDACTED]
 127. SIGNATURE: [REDACTED]
 128. DATE: [REDACTED]
 129. TIME: [REDACTED]
 130. LOCATION: [REDACTED]
 131. REASON: [REDACTED]
 132. WITNESSES: [REDACTED]
 133. REMARKS: [REDACTED]
 134. SIGNATURE: [REDACTED]
 135. DATE: [REDACTED]
 136. TIME: [REDACTED]
 137. LOCATION: [REDACTED]
 138. REASON: [REDACTED]
 139. WITNESSES: [REDACTED]
 140. REMARKS: [REDACTED]
 141. SIGNATURE: [REDACTED]
 142. DATE: [REDACTED]
 143. TIME: [REDACTED]
 144. LOCATION: [REDACTED]
 145. REASON: [REDACTED]
 146. WITNESSES: [REDACTED]
 147. REMARKS: [REDACTED]
 148. SIGNATURE: [REDACTED]
 149. DATE: [REDACTED]
 150. TIME: [REDACTED]
 151. LOCATION: [REDACTED]
 152. REASON: [REDACTED]
 153. WITNESSES: [REDACTED]
 154. REMARKS: [REDACTED]
 155. SIGNATURE: [REDACTED]
 156. DATE: [REDACTED]
 157. TIME: [REDACTED]
 158. LOCATION: [REDACTED]
 159. REASON: [REDACTED]
 160. WITNESSES: [REDACTED]
 161. REMARKS: [REDACTED]
 162. SIGNATURE: [REDACTED]
 163. DATE: [REDACTED]
 164. TIME: [REDACTED]
 165. LOCATION: [REDACTED]
 166. REASON: [REDACTED]
 167. WITNESSES: [REDACTED]
 168. REMARKS: [REDACTED]
 169. SIGNATURE: [REDACTED]
 170. DATE: [REDACTED]
 171. TIME: [REDACTED]
 172. LOCATION: [REDACTED]
 173. REASON: [REDACTED]
 174. WITNESSES: [REDACTED]
 175. REMARKS: [REDACTED]
 176. SIGNATURE: [REDACTED]
 177. DATE: [REDACTED]
 178. TIME: [REDACTED]
 179. LOCATION: [REDACTED]
 180. REASON: [REDACTED]
 181. WITNESSES: [REDACTED]
 182. REMARKS: [REDACTED]
 183. SIGNATURE: [RE

PARAMETER	DET. LIMIT	UNIT	RESULTS
TOTAL SULFUR DIOXIDE EMISSIONS			
GAS FLOW	1000	G/GH	16.5

DA/DC SURROGATE RECOVERY

J-54301-1, 1906 VENE 202

- ```

ND = NOT DETECTED ABOVE QUANTIFICATION LIMIT
0 = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE
5 = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
1 = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

```

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Alton • Broken Arrow, Oklahoma 74012 • 918-251-2258 • FAX: 918-251-2590

CLIENT: METCALF & EDDY  
1 FIERCE PLAZA, SUITE 1500 WEST  
ITASCA ILL 60143  
ATTN: DENNIS STOREY

REPORT: 11078.0571

DATE: 09-23-92

SAMPLE MATRIX: SOIL  
SALS: 11/17/92  
METHOD REFERENCE: EPA-1  
DATE SAMPLED: 9/16/92  
DATE RECEIVED: 9/16/92  
DATE ANALYZED: 9/23/92  
ANALYST: DANIELA PLUMMER  
SAMPLE ID: MW-15-17.0

| PARAMETER                                      | DET.<br>LIMIT | UNIT  | RESULT |
|------------------------------------------------|---------------|-------|--------|
| <u>SOIL EXTRACTABLE PETROLEUM HYDROCARBONS</u> |               |       |        |
| GASOLINE                                       | 10.0          | ug/kg | ND     |

## QA/QC SURROGATE RECOVERY

A-BROMOFLOUOROBENZENE 98%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
Q = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE



# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Alton • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA ILL 60143  
ATTN: DENNIS STOREY

REPORT: 11078.0671

DATE: 09-25-92

SAMPLE MATRIX: SOIL  
VOL: 10 mL  
METHOD REFERENCE: EPA-821-R-92-010  
DATE SAMPLED: 09-15-92  
DATE ANALYZED: 09-25-92  
PROJECT: MARLBOROUGH  
SAMPLE ID: MW-ND-154125

| PARAMETER                                       | DET.<br>LIMIT | UNIT | RESULTS |
|-------------------------------------------------|---------------|------|---------|
| <u>TOTAL RECOVERABLE PETROLEUM HYDROCARBONS</u> |               |      |         |
| GASOLINE                                        | 10.0          | ug/g | ND      |

## QA/QC SURROGATE RECOVERY

4-BROMOFLUORENCE 91%

- ND = NOT DETECTED ABOVE QUANTIFICATION LIMIT  
B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE; CONCENTRATION BELOW LIMIT OF QUANTIFICATION  
I = INABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Suite "C" • Broken Arrow, Oklahoma 74012 • 918-251-2854 • FAX 918-741-7880

## LABORATORY QUALITY CONTROL SEQUENCE

METHOD : SW846-8015 (MODIFIED) (IOWA METHOD)  
 SEQUENCE DATE : 09/22/92  
 INSTRUMENT ID. : 6

## LABORATORY BLANK

MATRIX : Water  
 SAMPLE ID. : BLANK  
 SAMPLE AMOUNT : 5.0 ml  
 ANALYSIS DATE : 09/22/92  
 ANALYSIS TIME : 09:28

ANALYST NO. : BLANK  
 FILENAME : 6092292\011F1101  
 DILUTION FACTOR: 1

| COMPOUND | QUANTITATION<br>LIMIT (ug/L) | AMOUNT FOUND<br>(ug/L) |
|----------|------------------------------|------------------------|
| GASOLINE | 10.0                         | 10.0 ND                |

SURROGATE RECOVERY (4-BROMOFLUOROBENZENE) : 101 %

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

| COMPOUND | SPIKE CONC.<br>(ug/kg) | 5819.04<br>SAMPLE CONC.<br>(ug/kg) * | 5819.04MS<br>MATRIX SPIKE<br>CONC. (ug/kg) * | PERCENT<br>RECOVERY |
|----------|------------------------|--------------------------------------|----------------------------------------------|---------------------|
| GASOLINE | 500.0                  | 16.6                                 | 479.1                                        | 92.5 %              |

|          | 5819.04MS<br>MATRIX SPIKE<br>DUPLICATE<br>CONC. (ug/kg) * | PERCENT<br>RECOVERY | RECOVERY PERCENT<br>DIFFERENCE |
|----------|-----------------------------------------------------------|---------------------|--------------------------------|
| GASOLINE | 487.2                                                     | 94.1 %              | ( 1.7 ) %                      |

\* DILUTION FACTORS NOT APPLIED TO THESE CONCENTRATIONS

5819.04 IS CLIENT SAMPLE NO:MM-3 7.5-10

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Alhambra • Broken Arrow, Oklahoma 74012 • 918-251-2859 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STORY

REPORT: 11239.01BX

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SMLO #: 11239.01  
METHOD REFERENCE: SW846-8020  
DILUTION FACTOR: 1  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-06-92  
PROJECT: HARLEY PUMP COMPANY  
SAMPLE ID: MW-1

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULTS |
|---------------------------|-----------------|------|---------|
| <u>GAS CHROMATOGRAPHY</u> |                 |      |         |
| BENZENE                   | 1.0             | ug/L | ND      |
| TOLUENE                   | 1.0             | ug/L | ND      |
| ETHYLBENZENE              | 1.0             | ug/L | ND      |
| XYLENES                   | 1.0             | ug/L | ND      |

QA SEQUENCE NO: 38240  
QA/QC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%) 102%

- E = ESTIMATED VALUE (ABOVE LINEAR RANGE)  
ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
S = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.  
SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION 850846, THIRD EDITION, NOVEMBER 1986

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2596

CLIENT: METCALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STORY

REPORT: 11239.0171

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SMLD # 11239.01  
METHOD REFERENCE: DA-1  
DILUTION FACTOR: 1  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-03-92  
PROJECT: HARLEY PUMP COMPANY  
SAMPLE ID: MW-1

| PARAMETER                                     | QUANT.<br>LIMIT | UNIT | RESULTS |
|-----------------------------------------------|-----------------|------|---------|
| <u>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</u> |                 |      |         |
| GASOLINE                                      | 10.0            | ug/L | 18.5    |

## GC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 93%

- # = SURROGATE RECOVERY OUTSIDE OF GC LIMITS ON ORIGINAL RUN AND RERUN.
- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
- B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE
- J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany - Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STOKY

REPORT: 11239.02BX

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SWLO # 11239.02  
METHOD REFERENCE: SW846-8020  
DILUTION FACTOR: 50  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-07-92  
PROJECT: HARLEY PUMP COMPANY  
SAMPLE ID: RM-2

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | PERCENT |
|---------------------------|-----------------|------|---------|
| <u>GAS CHROMATOGRAPHY</u> |                 |      |         |
| BENZENE                   | 50.0            | ug/L | 748     |
| TOLUENE                   | 50.0            | ug/L | 42.0    |
| ETHYLBENZENE              | 50.0            | ug/L | 322     |
| XYLENES                   | 50.0            | ug/L | 83.6    |

GA SEQUENCE NO: 38241  
GA/GC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (62-135%) 106%

- E = ESTIMATED VALUE (ABOVE LINEAR RANGE)  
ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
R = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.  
SM = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION 823/9-86, THIRD EDITION, NOVEMBER 1986

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: MERCALF & EDDY  
1 PIERCE PLAZA, SUITE 1000 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STORY

REPORT: 11239.0211

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SALO # 11239.02  
METHOD REFERENCE: OA-1  
DILUTION FACTOR: 10  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-07-92  
PROJECT: MARLEY PUMP COMPANY  
SAMPLE ID: PW-2

| PARAMETER                                     | QUANT.<br>LIMIT | UNIT | RESULTS |
|-----------------------------------------------|-----------------|------|---------|
| <u>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</u> |                 |      |         |
| GASOLINE                                      | 100.0           | ug/L | 2540.0  |

## PA/BC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 97%

- \* = SURROGATE RECOVERY OUTSIDE OF 90 LIMITS ON ORIGINAL RUN AND RERUN.
- N.D. = NOT DETECTED ABOVE QUANTITATION LIMIT
- B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE
- J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Liberty - Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2590

CLIENT: RETCALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STORY

REPORT: 11239.03BX

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SWLD #: 11239.03  
METHOD REFERENCE: SW846-8020  
DILUTION FACTOR: 5  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-08-92  
PROJECT: MARLEY PUMP COMPANY  
SAMPLE ID: Mw-3

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | REMARK |
|---------------------------|-----------------|------|--------|
| <u>GAS CHROMATOGRAPHY</u> |                 |      |        |
| BENZENE                   | 5.0             | ug/L | ND     |
| TOLUENE                   | 5.0             | ug/L | 22.2   |
| ETHYLBENZENE              | 5.0             | ug/L | ND     |
| XYLENES                   | 5.0             | ug/L | 2.8 J  |

## QA SEQUENCE NO: 39242 QA/QC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-1352) 110%

- F = ESTIMATED VALUE (ABOVE LINEAR RANGE)
- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
- B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE
- J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- S = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RE-RUN.
- SM = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION 846/6-84, THIRD EDITION, NOVEMBER 1984

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STORY

REPORT: 11239.03T1

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SWLO # 11239.03  
METHOD REFERENCE: DA-1  
DILUTION FACTOR: 1  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-05-92  
PROJECT: MARLEY PUMP COMPANY  
SAMPLE ID: RW-3

| PARAMETER                                     | QUANT.<br>LIMIT | UNIT | RESULTS |
|-----------------------------------------------|-----------------|------|---------|
| <u>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</u> |                 |      |         |
| GASOLINE                                      | 10.0            | ug/l | ND      |

NOTE: THE ELUTION PATTERN OF THIS SAMPLE IS NOT CONSISTANT WITH GASOLINE

## GC/MS SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 95%

- # = SURROGATE RECOVERY OUTSIDE OF GC LIMITS ON ORIGINAL RUN AND RERUN.
- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
- R = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE
- J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE



# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany - Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WES/  
ITASCA, ILL. 60143  
ATTN: DENISE STORY

REPORT: 11239.04BX

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SWLO # 11239.04  
METHOD REFERENCE: SW846-8020  
DILUTION FACTOR: 5  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-08-92  
PROJECT: MARLEY PUMP COMPANY  
SAMPLE ID: MW-10

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULTS |
|---------------------------|-----------------|------|---------|
| <u>GAS CHROMATOGRAPHY</u> |                 |      |         |
| BENZENE                   | 5.0             | ug/L | ND      |
| TOLUENE                   | 5.0             | ug/L | 29.1    |
| ETHYLBENZENE              | 5.0             | ug/L | ND      |
| XYLENES                   | 5.0             | ug/L | ND      |

## QA SEQUENCE NO: 38242 QA/QC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%) 123%

- E = ESTIMATED VALUE (ABOVE LINEAR RANGE)
- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
- B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE
- J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- K = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.
- SM = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany - Broken Arrow, Oklahoma 74012 • 918-251-2854 • FAX: 918-251-2590

CLIENT: METCALF & EDDY  
1 FIERCE PLAZA, SUITE 1500 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STORY

REPORT: 11239.C411

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SWLO # 11239.04  
METHOD REFERENCE: QA-1  
DILUTION FACTOR: 1  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-05-92  
PROJECT: PARLEY PUMP COMPANY  
SAMPLE ID: MW-20

| PARAMETER                                     | QUANT.<br>LIMIT | UNIT | RESULTS |
|-----------------------------------------------|-----------------|------|---------|
| <u>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</u> |                 |      |         |
| GASOLINE                                      | 10.0            | ug/L | ND      |

NOTE: THE ELUTION PATTERN OF THIS SAMPLE IS NOT CONSISTANT WITH GASOLINE

## QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 106%

- \* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.
- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
- B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE
- J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany - Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX 918-251-2599

CLIENT: METCALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STORY

REPORT: 11239.058X

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SMLO # 11239.05  
METHOD REFERENCE: SW846-8020  
DILUTION FACTOR: 1  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-06-92  
PROJECT: MARLEY PUMP COMPANY  
SAMPLE ID: KIMSATE

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | REMARKS |
|---------------------------|-----------------|------|---------|
| <u>GAS CHROMATOGRAPHY</u> |                 |      |         |
| BENZENE                   | 1.0             | ug/L | ND      |
| TOLUENE                   | 1.0             | ug/L | ND      |
| ETHYLBENZENE              | 1.0             | ug/L | ND      |
| XYLENES                   | 1.0             | ug/L | 0.5 J   |

BA SEQUENCE NO: 38240  
QA/QC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%) 90%

- E = ESTIMATED VALUE (ABOVE LINEAR RANGE)  
ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
R = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.  
SW = TES: METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION 846046, THIRD EDITION, NOVEMBER 1984

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STORY

REPORT: 11239.0511

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SWLO # 11239.05  
METHOD REFERENCE: OA-1  
DILUTION FACTOR: 1  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-05-92  
PROJECT: MARLEY PUMP COMPANY  
SAMPLE ID: RINSATE

| PARAMETER                                     | QUANT.<br>LIMIT | UNIT | RESULTS |
|-----------------------------------------------|-----------------|------|---------|
| <u>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</u> |                 |      |         |
| GASOLINE                                      | 10.0            | ug/L | ND      |

## QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 88%

- \* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.
- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
- B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE
- J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

**METCALF & EDDY, INC**  
**SOIL AND GROUNDWATER LABORATORY ANALYTICAL DATA**  
**ROUND 2 - OCTOBER 1993**



## SOUTHWEST LABORATORY OF OKLAHOMA, INC.

October 27, 1993

Deane Story  
METCALF AND HODDLE  
1 Pierce Plaza  
Suite 1000-W  
Itasca, IL, 60143

SWLO ID: 16022.01 - 16022.09

Project ID: Marley Pump Company

Dear Mr. Story:

Enclosed please find the analytical results for your samples received in our laboratory on October 21, 1993, for the above captioned project.

If, in your review, you should have any questions or require additional information, please call.

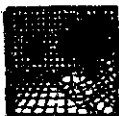
Sincerely,

Daryl Alstett  
Project Officer

ma/rwa

Enclosures

1700 WEST ALABAMA • BROKEN ARROW, OK 74012-1491 • (516) 251-2556 • FAX (516) 251-2556



# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2854 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
 1 PIERCE PLAZA, STE 1400-W  
 ITASCA, IL, 60143  
 ATTN: DENISE STORY

REPORT: 16022.01RX

DATE: 10-27-93

SAMPLE MATRIX: SOIL  
 SWLO # 16022.01  
 DATE SAMPLED: 10-19-93  
 DATE SUBMITTED: 10-21-93  
 DATE ANALYZED: 10-25-93  
 DILUTION FACTOR: 1.0  
 METHOD REFERENCE: SW846-8020  
 PROJECT: MARLEY PUMP CO.  
 SAMPLE ID: B-1 4-6

| PARAMETER                 | QUANT.<br>LIMIT | UNIT  | RESULT |
|---------------------------|-----------------|-------|--------|
| <b>GAS CHROMATOGRAPHY</b> |                 |       |        |
| BENZENE                   | 1.0             | ug/Kg | ND     |
| TOLUENE                   | 1.0             | ug/Kg | ND     |
| ETHYLBENZENE              | 1.0             | ug/Kg | ND     |
| XYLENES                   | 1.0             | ug/Kg | ND     |

QA SEQUENCE NO: 38102593  
 QA/QC SURROGATE RECOVERY:

4-BROMOFLUOROBENZENE (65-1354)

844

ND - NOT DETECTED ABOVE QUANTITATION LIMIT  
 B - ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
 J - ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
 \* - SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RE-RUN.  
 SW - TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2952 • Fax (918) 251-2999

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.013

DATE: 10-27-93

SAMPLE MATRIX: SOIL  
SWLO # 16022.01  
METHOD REFERENCE: OA-1  
DATE SUBMITTED: 10-21-93  
DATE ANALYSED: 10-22-93  
PROJECT: HARLEY PUMP CO.  
SAMPLE ID: B-1 4-6

| PARAMETER                                     | DET.<br>LIMIT | UNIT  | RESULT |
|-----------------------------------------------|---------------|-------|--------|
| <b>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</b> |               |       |        |
| GASOLINE                                      | 10.0          | ug/Kg | 13.8   |

**QA/QC SURROGATE RECOVERY**

4-BROMOFLUOROBENZENE 109%

ND - NOT DETECTED ABOVE QUANTITATION LIMIT  
B - COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J - ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I - UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE





# **SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-3958 • Fax (918) 251-3999

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.02RX

DATE: 10-27-93

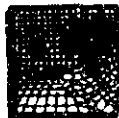
SAMPLE MATRIX: SOIL  
SWLO # 16022.02  
DATE SAMPLED: 10-19-93  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-25-93  
DILUTION FACTOR: 1.0  
METHOD REFERENCE: SW846-8020  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: B-2 6-8

| PARAMETER                 | QUANT.<br>LIMIT | UNIT  | RESULT |
|---------------------------|-----------------|-------|--------|
| <b>GAS CHROMATOGRAPHY</b> |                 |       |        |
| BENZENE                   | 1.0             | ug/Kg | ND     |
| TOLUENE                   | 1.0             | ug/Kg | ND     |
| STYLABENZENE              | 1.0             | ug/Kg | ND     |
| XYLENES                   | 1.0             | ug/Kg | ND     |

QA SEQUENCE NO: 28102393  
QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE (65-1354) 849

- ND - NOT DETECTED ABOVE QUANTIFICATION LIMIT  
N - ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J - ESTIMATED VALUE; CONCENTRATION BELOW LIMIT OF QUANTIFICATION  
\* - SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RE-RUN.  
SW - TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2999

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.021

DATE: 10-27-93

SAMPLE MATRIX: SOIL  
SWLO # 16022.02  
METHOD REFERENCE: OA-1  
DATE SUBMITTED: 10-21-93  
DATE ANALYSED: 10-22-93  
PROJECT: WARLEY PUMP CO.  
SAMPLE ID: B-2 6-8

| PARAMETER                                     | DET.<br>LIMIT | UNIT  | RESULT |
|-----------------------------------------------|---------------|-------|--------|
| <b>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</b> |               |       |        |
| GASOLINE                                      | 10.0          | ug/Kg | ND     |

**QA/QC SUBSTRATE RECOVERY**

4-BROMOFLUOROBENZENE 83%

ND - NOT DETECTED ABOVE QUANTITATION LIMIT  
B - COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J - ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I - UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE



# **SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2854 • Fax (918) 251-2999

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022-04BX

DATE: 10-27-93

SAMPLE MATRIX: SOIL  
SWLO # 16022-04  
DATE SAMPLED: 10-18-93  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-25-93  
DILUTION FACTOR: 1.0  
METHOD REFERENCE: SW846-8020  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: B-3 5-8

| PARAMETER                 | QUANT.<br>LIMIT | UNIT  | RESULTS |
|---------------------------|-----------------|-------|---------|
| <b>GAS CHROMATOGRAPHY</b> |                 |       |         |
| BENZENE                   | 1.0             | ug/Kg | ND      |
| TOLUENE                   | 1.0             | ug/Kg | 0.6 J   |
| ETHYLBENZENE              | 1.0             | ug/Kg | ND      |
| XYLENES                   | 1.0             | ug/Kg | ND      |

QA SEQUENCE NO: 38102593

QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE (65-1354) 764

ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
\* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RE-RUN.  
SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1984

10/27/93

14:27

SW 251 8363

SW LABORATORIES

011/021

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.041

DATE: 10-27-93

SAMPLE MATRIX: SOIL  
SWLO # 16022.04  
METHOD REFERENCE: QA-1  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-22-93  
PROJECT: MAKLEY PUMP CO.  
SAMPLE ID: B-3 6-6

| PARAMETER                                     | DET.<br>LIMIT | UNIT  | RESULTS |
|-----------------------------------------------|---------------|-------|---------|
| <u>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</u> |               |       |         |
| GASOLINE                                      | 10.0          | ug/kg | 13.0    |

QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 84%

- ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE



# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2510 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
 1 PIERCE PLAZA, STE 1400-W  
 ITASCA, IL, 60143  
 ATTN: DENISE STORY

REPORT: 16022.03BX

DATE: 10-27-93

SAMPLE MATRIX: SOIL  
 SWLO # 16022.03  
 DATE SAMPLED: 10-19-93  
 DATE SUBMITTED: 10-21-93  
 DATE ANALYZED: 10-25-93  
 DILUTION FACTOR: 1.0  
 METHOD REFERENCE: SW846-8020  
 PROJECT: HARLEY PUMP CO.  
 SAMPLE ID: MW-4 9.5-11.5

| PARAMETER                 | QUANT.<br>LIMIT | UNIT  | RESULTS |
|---------------------------|-----------------|-------|---------|
| <u>GAS CHROMATOGRAPHY</u> |                 |       |         |
| BENZENE                   | 1.0             | ug/kg | ND      |
| TOLUENE                   | 1.0             | ug/kg | ND      |
| ETHYLBENZENE              | 1.0             | ug/kg | ND      |
| XYLENES                   | 1.0             | ug/kg | ND      |

QA SEQUENCE NO: 35101993  
 QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE (55-1356)

766

- ND - NOT DETECTED ABOVE QUANTITATION LIMIT  
 B - ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
 J - ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
 \* - SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.  
 SW - TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986



# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2950 • Fax (918) 251-2999

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.031

DATE: 10-27-93

SAMPLE MATRIX: SOIL  
SWLO # 16022.03  
METHOD REFERENCE: OA-1  
DATE SUBMITTED: 10-21-93  
DATE ANALYSED: 10-22-93  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: NW-4 9.5-11.5

| PARAMETER                                     | DET.<br>LIMIT | UNIT  | RESULTS |
|-----------------------------------------------|---------------|-------|---------|
| <u>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</u> |               |       |         |
| GASOLINE                                      | 10.0          | ug/Kg | ND      |

## QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 74%

- ND - NOT DETECTED ABOVE QUANTITATION LIMIT  
B - COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J - ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I - UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE



# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2556 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITANCA, IL, 60143  
ATTE: DENISE STORY

REPORT: 16022.05RX

DATE: 10-27-93

SAMPLE MATRIX: WATER  
SWLO # 16022.05  
DATE SAMPLED: 10-20-93  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-26-93  
DILUTION FACTOR: 1.0  
METHOD REFERENCE: SW846-8020  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: MW-1

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULT |
|---------------------------|-----------------|------|--------|
| <u>GAS CHROMATOGRAPHY</u> |                 |      |        |
| BENZENE                   | 1.0             | ug/L | ND     |
| TOLUENE                   | 1.0             | ug/L | .6 J   |
| ETHYLBENZENE              | 1.0             | ug/L | ND     |
| XYLENES                   | 1.0             | ug/L | .6 J   |

QA SEQUENCE NO: 38102693

QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE (65-1354) 1074

- ND - NOT DETECTED ABOVE QUANTITATION LIMIT  
 B - ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
 J - ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
 \* - SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.  
 SW - TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986



# **SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-3858 • Fax (918) 251-3599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.051

DATE: 10-27-93

SAMPLE MATRIX: WATER  
SWLO # 16022.05  
METHOD REFERENCE: OA-1  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-25-93  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: NW-1

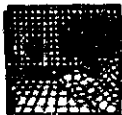
| PARAMETER                                     | DET.<br>LIMIT | UNIT | RESULTS |
|-----------------------------------------------|---------------|------|---------|
| <b>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</b> |               |      |         |
| GASOLINE                                      | 10.0          | ug/L | ND      |

## **GLC/SURROGATE RECOVERY**

4-BROMOPHLOUROBENZENE 1134

- ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE





# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2854 • Fax (918) 251-2597

CLIENT: METCALF AND EDDIE  
 1 PIERCE PLAZA, STE 1400-W  
 ITASCA, IL, 60143  
 ATTN: DENISE STORY

REPORT: 16022.06RX

DATE: 10-27-93

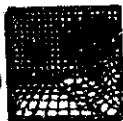
SAMPLE MATRIX: WATER  
 SWLC # 16022.06  
 DATE SAMPLED: 10-20-93  
 DATE SUBMITTED: 10-21-93  
 DATE ANALYZED: 10-26-93  
 DILUTION FACTOR: 5.0  
 METHOD REFERENCE: SW846-802D  
 PROJECT: HARLEY PUMP CO.  
 SAMPLE ID: MW-2

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULTS |
|---------------------------|-----------------|------|---------|
| <u>GAS CHROMATOGRAPHY</u> |                 |      |         |
| BENZENE                   | 5.0             | ug/L | 160     |
| TOLUENE                   | 5.0             | ug/L | 21.0    |
| ETHYLBENZENE              | 5.0             | ug/L | 3.6 J   |
| XYLENES                   | 5.0             | ug/L | 175     |

QA SEQUENCE NO: 2B102693  
 QA/QC SURROGATE RECOVERIES

4-BROMOFLOUROBENZENE (65-1380) 1220

- MD - NOT DETECTED ABOVE QUANTITATION LIMIT  
 B - ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
 J - ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
 \* - SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND REGRUN.  
 SW - TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2854 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STONY

REPORT: 16022.061

DATE: 10-27-93

SAMPLE MATRIX: WATER  
SWLO # 16022.06  
METHOD REFERENCE: OA-1  
DATE SUBMITTED: 10-21-93  
DATE ANALYSED: 10-25-93  
PROJECT: HANLEY PUMP CO.  
SAMPLE ID: MW-2

| PARAMETER                                     | DET.<br>LIMIT | UNIT | RESULT |
|-----------------------------------------------|---------------|------|--------|
| <b>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</b> |               |      |        |
| GASOLINE                                      | 10.0          | ug/L | 995    |

**QA/QC SURROGATE RECOVERY**

4-BROMOFLUOROBENZENE 1978 \*\*

- \*\* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RE-RUN  
ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE



# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 257-2858 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
 1 PIERCE PLAZA, STE 1400-W  
 ITASCA, IL, 60143  
 ATTN: DENISE STORY

REPORT: 16022.07RX

DATE: 10-27-93

SAMPLE MATRIX: WATER  
 SWLO # 16022.07  
 DATE SAMPLED: 10-20-93  
 DATE SUBMITTED: 10-21-93  
 DATE ANALYZED: 10-26-93  
 DILUTION FACTOR: 1.0  
 METHOD REFERENCE: SW846-8020  
 PROJECT: HARLEY PUMP CO.  
 SAMPLE ID: MW-3

| PARAMETER | QUANT.<br>LIMIT | UNIT | RESULT |
|-----------|-----------------|------|--------|
|-----------|-----------------|------|--------|

## GAS CHROMATOGRAPHY

|              |     |      |      |
|--------------|-----|------|------|
| BENZENE      | 1.0 | ug/L | 7.9  |
| TOLUENE      | 1.0 | ug/L | 25.6 |
| ETHYLBENZENE | 1.0 | ug/L | 2.9  |
| XYLENES      | 1.0 | ug/L | 6.1  |

QA SEQUENCE NO: 28102693  
 QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE (65-1354) 1214

ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
 B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
 J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
 \* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.  
 SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.071

DATE: 10-27-93

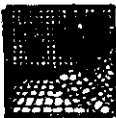
SAMPLE MATRIX: WATER  
SWLO # 16022.07  
METHOD REFERENCE: OA-1  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-25-93  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: MW-3

| PARAMETER                                     | DET.<br>LIMIT | UNIT | RESULTS |
|-----------------------------------------------|---------------|------|---------|
| <b>TOTAL FURGEABLE PETROLEUM HYDROCARBONS</b> |               |      |         |
| GASOLINE                                      | 10.0          | ug/L | 177     |

**QA/QC SURROGATE RECOVERY**

4-BROMOFLUOROBENZENE 89%

NE - NOT DETECTED ABOVE QUANTITATION LIMIT  
B - COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J - ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I - UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2854 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORV

REPORT: 16022.08BX

DATE: 10-27-93

SAMPLE MATRIX: WATER  
SWLO # 16022.08  
DATE SAMPLED: 10-20-93  
DATE SUBMITTED: 10-21-93  
DATE ANALYSED: 10-25-93  
DILUTION FACTOR: 1.0  
METHOD REFERENCE: SW846-8020  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: MW-4

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULT |
|---------------------------|-----------------|------|--------|
| <b>GAS CHROMATOGRAPHY</b> |                 |      |        |
| BENZENE                   | 1.0             | ug/L | ND     |
| TOLUENE                   | 1.0             | ug/L | ND     |
| ETHYLBENZENE              | 1.0             | ug/L | ND     |
| XYLENES                   | 1.0             | ug/L | ND     |

QA SEQUENCE NO: 38102592

QA/QC SURROGATE RECOVERY

4-BROMOFLOUOROBENZENE (65-135)

86%

- ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
\* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RE-RUN.  
SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

10/27/93

14:30

27018 251 0303

SW LABORATORIES

Q018/031

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.081

DATE: 10-27-93

SAMPLE MATRIX: WATER  
SWLO # 16022.08  
METHOD REFERENCE: OA-1  
DATE SUBMITTED: 10-21-93  
DATE ANALYSED: 10-25-93  
PROJECT: MARLEY PUMP Co.  
SAMPLE ID: HW-4

| PARAMETER                                     | DET.<br>LIMIT | UNIT | RESULT |
|-----------------------------------------------|---------------|------|--------|
| <b>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</b> |               |      |        |
| GASOLINE                                      | 10.0          | ug/L | ND     |

**QA/QC SURROGATE RECOVERY**

4-BROMOFLUOROBENZENE

84%

- ND - NOT DETECTED ABOVE QUANTITATION LIMIT  
B - COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J - ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I - UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE



# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.09BX

DATE: 10-27-93

SAMPLE MATRIX: WATER  
SWLO # 16022.09  
DATE SAMPLED: 10-20-93  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-25-93  
DILUTION FACTOR: 1.0  
METHOD REFERENCE: SW846-8020  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: MW-40

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULT |
|---------------------------|-----------------|------|--------|
| <b>GAS CHROMATOGRAPHY</b> |                 |      |        |
| BENZENE                   | 1.0             | ug/L | ND     |
| TOLUENE                   | 1.0             | ug/L | ND     |
| ETHYLBENZENE              | 1.0             | ug/L | ND     |
| XYLENES                   | 1.0             | ug/L | ND     |

QA SEQUENCE NO: 38102893  
QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE (65-1354)

694

- ND - NOT DETECTED ABOVE QUANTITATION LIMIT
- B - ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE
- J - ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- S - SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RE-RUN.
- SW - TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

10/27/93

14:31

SW 910 251 0303

SW LABORATORIES

0021/021

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2550 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.091

DATE: 10-27-93

SAMPLE MATRIX: WATER  
SVLO # 16022.09  
METHOD REFERENCE: OA-1  
DATE SUBMITTED: 10-21-93  
DATE ANALYSED: 10-25-93  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: MW-40

| PARAMETER                                     | DET.<br>LIMIT | UNIT | RESULTS |
|-----------------------------------------------|---------------|------|---------|
| <b>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</b> |               |      |         |
| GASOLINE                                      | 10.0          | ug/L | ND      |

**QA/QC SURROGATE RECOVERY**

4-BROMOFLOUROBENZENE

89%

ND - NOT DETECTED ABOVE QUANTITATION LIMIT  
B - COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J - ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I - UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE





## CHAIN OF CUSTODY RECORD

SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Bartlesville, OK 74603  
Call: (918) 336-1100 • Fax: (918) 336-1101

LABORATORY

Honey 12/1/92

LABORATORY

Honey 12/1/92

PHONE NUMBER

788 7750300

PROJECT NUMBER

010145

PROJECT NAME

Honey Drug Co.

LABORATORY

Honey 12/1/92

| QTA NO | DATE  | TIME | GROUP | QTA  | QTY/LOCATION | QTY  | NO OF EXAMINATIONS | REMARKS |
|--------|-------|------|-------|------|--------------|------|--------------------|---------|
| 010145 | 12-10 |      | X     | B-1  | 4-6          | Seal | 1-400              |         |
| 010145 | 12-07 |      | X     | B-2  | 6-8          | Seal | 1-400              |         |
| 010145 | 12-05 |      | X     | MW-4 | 95-115       | Seal | 1-400              |         |
| 010145 | 12-10 |      | X     | B-3  | 6-8          | Seal | 1-400              |         |
| 010145 | 09-05 |      | Y     | MW-1 |              | Seal | 2-400              |         |
| 010145 | 09-10 |      | Y     | MW-2 |              | Seal | 2-400              |         |
| 010145 | 09-02 |      | Y     | MW-3 |              | Seal | 2-400              |         |
| 010145 | 09-15 |      | Y     | MW-4 |              | Seal | 2-400              |         |
| 010145 | 09-15 |      | Y     | MW-4 |              | Seal | 2-400              |         |

No guarantee used  
only testTAT = 7 days Results  
Will be 10/27/92.  
Please call Denise  
Strong w/ questions

|                                 |               |               |                  |
|---------------------------------|---------------|---------------|------------------|
| APPROVED BY: <i>[Signature]</i> | DATE: 12/1/92 | TIME: 14:30   | REMARKS: [Blank] |
| APPROVED BY: [Blank]            | DATE: [Blank] | TIME: [Blank] | REMARKS: [Blank] |
| APPROVED BY: [Blank]            | DATE: [Blank] | TIME: [Blank] | REMARKS: [Blank] |

|                      |                |               |                  |
|----------------------|----------------|---------------|------------------|
| APPROVED BY: [Blank] | DATE: [Blank]  | TIME: [Blank] | REMARKS: [Blank] |
| APPROVED BY: [Blank] | DATE: 10/27/92 | TIME: [Blank] | REMARKS: [Blank] |
| APPROVED BY: [Blank] | DATE: [Blank]  | TIME: [Blank] | REMARKS: [Blank] |

**METCALF & EDDY, INC**  
**SOIL AND GROUNDWATER LABORATORY ANALYTICAL DATA**  
**JANUARY 6, 1994 - MONITORING WELL MW-3**



NATIONAL  
ENVIRONMENTAL  
TESTING, INC.

Full Enterprise Drive  
Cedar Falls, IA, 50613  
Tel: (319) 277-5481  
Fax: (319) 277-5486

## ANALYTICAL REPORT

Denise Story  
METCALF & EDDY, INC.  
One Pierce Place  
Suite 1500-W  
Itasca, IL 60143  
708/775-0300

01/12/1994

NET Job Number: 94.00104

NET Sample Number: 236572

Collected by: Nite But

Collector Phone No.: 708/775-0300

Job Description: WASTEWATER 001015-0005 - DAVENPORT, IOWA

Date Taken: 01/04/1994

Date Received: 01/07/1994

Sample ID: NW-3 Hurley Pump Co.

| Analysis                 | Sample | Units | Result<br>Limit | Notes<br>Analysis | Method        | Reporting<br>Limit | Matrix |
|--------------------------|--------|-------|-----------------|-------------------|---------------|--------------------|--------|
| VOLATILES - STEK (WATER) |        |       |                 |                   |               |                    |        |
| Benzene                  | <10    | ug/L  | 1:1             | 01/10/1994        | 0-0015/1A-001 | 2.0 ug/L           | Water  |
| Ethylbenzene             | <10    | ug/L  | 1:1             | 01/10/1994        | 0-0015/1A-001 | 2.0 ug/L           | Water  |
| Toluene                  | 15     | ug/L  | 1:1             | 01/10/1994        | 0-0015/1A-001 | 2.0 ug/L           | Water  |
| Xylenes, Total           | <10    | ug/L  | 1:1             | 01/10/1994        | 0-0015/1A-001 | 2.0 ug/L           | Water  |
| Total Hydrocarbons       | 12     | ug/L  | 1:1             | 01/10/1994        | 0-0015/1A-001 | 0.10 ug/L          | Water  |

NOTE: Sample contains 2 large non-target peaks which resulted in elevated reporting limit.

All results are calculated on a wet weight basis.

Reporting limits are extremely matrix dependent and may not always be achievable.

Key to Flags: 9 = Chromatogram does not match gasoline (GA-1 only) 0 = Blank bit for this compound

Units: ug/L = ppm ug/g = ug/L = ppm ug/L = ppm

  
M. L. Bindert  
Operations Manager



## CHAIN OF CUSTODY RECORD

COMPANY METCAL 3 RDY, INC.  
ADDRESS 1015 15th W / PERRY ST, FORT COCK, FL 32939  
PHONE 781/775-2300 FAX 781/775-1136  
PROJECT NAME/LOCATION ADAMS PARK CO / DORCHESTER, MA  
PROJECT NUMBER 01/155-2003 29  
PROJECT MANAGER DENISE G. TAYLOR

REPORT TO: Deputy Staff / MLO

REFERENCE TO: *Dennis Smith / MLE*

PO NO

REF ON NOTE NO.

SAMPLED BY MIKE DUGT



## CONCLUSIONS

Mile Out

**www.pearson.com**

**Abstract**

2002年12月

AL 3

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LOW BUTTER

CONDITION OF SAMPLE: BOTTLES INTACT? YES / NO  
FIELD FILTERED? YES / NO

**COC SEALS PRESENT AND INTACT? YES / NO**  
**VOLATILES FREE OF HEADSPACE? YES / NO**

### TEMPERATURE UPON INCUBATION

SAMPLE REMAINDER DISPOSAL: RETURN SAMPLE REMAINDER TO CLIENT VIA \_\_\_\_\_  
I REQUEST NET TO DISPOSE OF ALL SAMPLE REMAINDER: \_\_\_\_\_



DATE 8/14/1994

**SELECTED REFERENCES**

**CONCLUSION**

**自合自強 自強**

**THE UNIVERSITY OF CHICAGO**

\_\_\_\_\_

\_\_\_\_\_

AL Dust

6/26/74 (900)

7/9/44 HDS

*John Doe*

### METHOD OF SURVEY

**POSTAL ADDRESS:**

### Average Energy

FILED IN: 610 473 337 7/94

# QUAD CITY WATER TREATMENT CO.

1798 Iowa Drive - P.O. Box 745 - LeClaire, Iowa 52751-0745  
PH. (319) 289-3373 - Fax (319) 289-5526



## LABORATORY REPORT

RECEIVED

JUN 23

PERSONNEL DEPT.

MR. DAVE VANZUIDEN  
HARLEY PUMP CO.  
500 EAST 59TH ST  
DAVENPORT, IOWA 52807

REPORT DATE: 6-9-94  
SAMPLE REC: 5-10-94  
SAMPLE DATE: 5-10-94

OFFICE WATER FOUNTAIN

TRICHLOROETHYLENE <0.001 PPM  
TRICHLOROETHANE <0.001 PPM  
METHODS: SW 846 9260

SHIPSHAPE DRUM

TOTAL SOLIDS

2410 MG/L

ANALYSIS CERTIFIED BY:  
ROBERT S. BLACK  
ENVIRONMENTAL CHEMIST

**APPENDIX XII (B)**  
**OFF-SITE CONTAMINATION SOURCE SUPPORT DATA**

Not applicable. The source is on-site.

**APPENDIX XIII**  
**SITE RISK CLASSIFICATION AND JUSTIFICATION**

**A. HIGH RISK SITE CONDITIONS**

1. Confined spaces or occupied spaces have not been impacted by the petroleum release as evidenced by the PID and CGI vapor survey conducted in the pumphouse manhole located near the southwest corner of the property. Other utilities could not be surveyed because they were not accessible nor were open trenches available to survey. Therefore, benzene in occupied structures/utilities will not likely exceed 10 ppm for an 8 hour day.
2. A confined space survey was conducted and vapors were not present (see answer to question 1).
3. Surface water bodies such as lakes, streams, and ponds are not located within 1,000 feet (304.8 meters) of the designated petroleum impacted area. At an average hydraulic conductivity of 2.61 m/year, it would take over 117 years to reach the creek located east of this site. Surface water body samples were not collected.
4. Laboratory analytical data indicated that soil samples collected from each borehole did not exceed the IDNR action level of 100 mg/kg. MW-3 registered the highest PID reading, 141 ppmv (15 - 17.5'). The laboratory results for this sample was recorded at none detected TPH. The soil sample collected at 7.5 - 10 feet below grade registered at 0.016 ppm, well below the IDNR action level. Therefore, no soil exceeding 100 mg/kg is in contact with a water transmission line. Furthermore, the water transmission line near the site are made of cast iron and not PVC. *not used to conduct*
5. Soil laboratory analytical data indicated that the IDNR action level of 100 mg/kg was not exceeded in any soil boring or monitoring wells. The highest TPH reading, 0.0016 ppm, was recorded from MW-3 at the 7.5 - 10 foot interval. The 141 ppmv PID reading, taken at the 15 - 17.5' interval, was recorded by the laboratory as non-detect TPH. Soil analytical data collected from other borings and intervals indicate that non-detect level of TPH. Therefore, soil located within the vicinity of the utility conduits is not impacted. *later interference  
level 7.5'  
PID 141 ppmv  
non-detect  
samples*

Open utility trenches were not available to conduct a soil vapor survey. To avoid puncturing a utility line, drilling was not conducted in the backfill trenches. However, three soil borings and four monitoring wells were placed in the vicinity of the utility lines to determine whether petroleum contamination had come into contact with the utility conduits' trenches thereby migrating to the native material.

Groundwater elevations from the four on-site monitoring wells indicate that the flow direction is toward the east-southeast and that the water elevations range from 11 - 18 feet below grade. Utility trench depths in the vicinity of the UST ranged from 2 feet below grade to 8 feet below grade.

Groundwater analytical results indicate that three (MW-1, MW-3, and MW-4) of the four monitoring wells had not exceeded IDNR standards for BTEX constituents. Monitoring well MW-2 (168 ug/l) had exceeded the IDNR action level for benzene (5 ppb) only. The water level for MW-2 was 16.59 feet below grade. MW-2 is located in the vicinity of a steel gas main (buried approximately 42" below grade), a steel water main (buried approximately five feet below grade), and a by-pass water main (buried approximately five feet below grade). However, the depth to groundwater is much deeper than the utility trenches hence, fluctuation in the groundwater elevations would not impact the utility conduits.

6. The petroleum contamination is not present in high concentrations to affect or cause any damage to utility lines or structures. Furthermore, the utility lines are not in contact with the groundwater (groundwater ranges in depth from 11 feet to 18 feet below grade). The deepest utility trench is 8 feet below grade.
7. Laboratory analytical data indicate that the soil did not exceed 100 mg/kg for total organic hydrocarbons. Soil analytical data ranged from non-detect in MW-1, MW-2, MW-4, and B-2 to 0.016 ppm in MW-3, well below the IDNR action level. All inhabitants of 59th Street, rely on the city of Davenport as a water supply. Marley Pump company does have an operating water supply well located within 1,000 feet of the impacted area. This well supplies the plant with industrial water and drinking water. The depth of this well is approximately 240' and has a steel casing. This well withdraws water from a much deeper source that is separated by many differing stratigraphic units, some of them being aquitards. Well construction information is not available nor is the geologic log. However, the local geology consists of a clayey silt (thickness of 20 - 25 feet below grade) and is underlain by a glacial till. The soil strata is consistent throughout the site as made evident by on-site soil borings. Hydraulic conductivities for the clayey silt range from 0.00673 m/day to 0.00804 m/day. Transmissivities range from 0.0022 m<sup>2</sup>/sec to 0.0073 m<sup>2</sup>/sec. Documented evidence indicated that the glacial till has a hydraulic conductivity equal to approximately  $1 \times 10^3$  m/day. This layer acts as an aquitard and helps protect the deeper water sources from impact.

The substance needing to be addressed is gasoline. Gasoline consists of a wide variety of hydrocarbons. Benzene, ethylbenzene, toluene and xylene (BTEX) will be used as surrogate parameters for the wide variety of hydrocarbons found in gasoline. Although biodegradable, gasoline may persist in the environment while adsorbed on soil particles, floating on groundwater as a separate phase liquid, or dissolved in the groundwater. Gasoline constituents may migrate, however, the rate of migration is controlled by the geology of the impacted area.



Physicochemical characteristics of gasoline and BETX compounds are presented below:

| CHEMICAL             | FLASH POINT (°F) | FLAMMABLE LIMITS (%) | DENSITY (at 20°C) | SOLUBILITY (% at 20°C) | VAPOR PRESSURE (mm Hg) | HENRY'S LAW CONSTANT |
|----------------------|------------------|----------------------|-------------------|------------------------|------------------------|----------------------|
| gasoline             | -36              | 1.3 - 7.4            | 0.73              | NA                     | 383                    | NA                   |
| benzene              | 12               | 1.3 - 7.1            | 0.88              | 0.18                   | 75                     | 240                  |
| toluene              | 40               | 1.3 - 7.1            | 0.87              | 0.05                   | 22                     | 330                  |
| ethylbenzene         | 59               | 1.0 - 6.7            | 0.87              | 0.02                   | 7.1                    | 350                  |
| xylene (all isomers) | 81 - 90          | 1.0 to 7             | 0.86 to 0.88      | immiscible             | 9                      | not applicable       |

Due to the low permeability of the soils, the migration potential of these constituents is low.

8. Laboratory analytical data indicated that soil samples collected from each borehole did not exceed the IDNR action level of 100 mg/kg. Soil analytical data ranged from non-detect in MW-1, MW-2, MW-4 and B-2 to 0.016 ppm in MW-3, well below the IDNR action level. Additionally, due to torrential downpours and flooding in the Davenport area in 1993, the seasonal high water elevation was established. And, the seasonal high groundwater level of a protected groundwater source or groundwater serving as a public or private water source, was not affected. The city of Davenport obtains its water from the Mississippi River (the public water supply source).

Marley Pump Company has a water supply well on site. This well is approximately 240' deep and is encased in steel. The water table (aquifer) in question is approximately 200' above a private protected groundwater source. Within this 200', several differing stratigraphic units exist, some of them being aquifers. The local geology consists of a clayey silt (thickness of 20 - 25 feet below grade) and is underlain by a glacial till. The soil strata is consistent throughout the site as made evident by on-site soil borings. Hydraulic conductivities for the clayey silt range from 0.00673 m/day to 0.00804 m/day. Transmissivities range from 0.0022 m<sup>2</sup>/sec to 0.0073 m<sup>2</sup>/sec. Documented evidence indicated that the glacial till has a hydraulic conductivity equal to approximately  $1 \times 10^{-5}$  m/day. This layer acts as an aquitard and helps protect the deeper water sources from impact.

9. The petroleum release did not occur in fractured limestone nor karst topography. The site is not characterized by sinkholes, caves, and/or

underground drainage. The site is characterized by clayey silt underlain by a glacial till. No discontinuities occur in the clayey silt.

For further information, see Section II, Current site conditions for general geology.

10. Marley Pump Company has one water supply well located on the west side of the manufacturing building and is approximately 40 feet southwest of the UST. The water supply well is situated 240 feet below grade and is encased in steel. The well casing provides protection from other overlying inferior strata and allows quality water to be used for industrial and potable purposes. Furthermore, the overlying strata, particularly in the area of the UST, an industrial water supply well, consists of a silty clay ( $K = 0.00673$  m/day to  $0.00804$  m/day). Situated below the silty clay unit is a glacial till. This till is located approximately 20 - 25 feet below grade and is continuous. According to Freeze and Cherry (1979), glacial till has a hydraulic conductivity of  $8.64 \times 10^{-4}$  m/day to  $8.64 \times 10^{-7}$  m/day. This layer acts as an aquitard which impedes the infiltration of groundwater to stratigraphic units below. Additionally, the soil has not been impacted above the IDNR action level for TPH, 100 ppm. Groundwater has only been exceeded in one monitoring well, MW-2, for benzene. The groundwater which exceeded IDNR level for benzene is not used as a public or private water supply source nor is it a protected water supply source.
11. It is unlikely, given the hydraulic conductivities of the soil ( $10^{-4}$  m/sec) that a protected water source would be impacted. The public water source for drinking water is the Mississippi River. The contaminated area is not greater than 19 - 25 feet below grade. Deeper water sources are protected by an aquitard, a glacial till, which lies 20 - 25 feet below grade and is continuous.
12. The contaminated groundwater plume is within 100 feet of natural or man-made structures or conduits. The utilities, at their maximum buried depth are 8 feet below grade. The groundwater level at the site ranges from 11 feet (upgradient well MW-3) to 18 feet below grade (downgradient wells MW-2 and MW-4). Most utilities are located near MW-2 and MW-4. Therefore, since the utilities are located significantly above the water table, the utility trenches will not transport contaminants to the subsurface and impact the protected groundwater source that is used for a public or private water supply (The Mississippi River is used as the public water supply). For further information, see answers to questions 10 and 11.
13. Marley Pump Company has one water supply well located on the west side of the manufacturing building and is approximately 40 feet southwest of the UST. The water supply well is situated 240 feet below grade and is encased in steel. The well casing provides protection from other overlying inferior strata and allows quality water to be used for industrial and potable purposes.

Furthermore, the overlying strata, particularly in the area of the UST an industrial water supply well, consists of a silty clay ( $K = 0.00673$  m/day to  $0.00804$  m/day). Situated below the silty clay unit is a glacial till. This till is located approximately 20 - 25 feet below grade and is continuous. According to Freeze and Cherry (1979), glacial till has a hydraulic conductivity of  $8.64 \times 10^{-4}$  m/day to  $8.64 \times 10^{-3}$  m/day. This layer acts as an aquitard which impedes the infiltration of groundwater to stratigraphic units below. Additionally, the soil has not been impacted above the IDNR action level for TPH, 100 ppm. Groundwater has only been exceeded in one monitoring well, MW-2, for benzene. The groundwater which exceeded IDNR level for benzene is not used as a public or private water supply source nor is it a protected water supply source.

Because of the following points, the site can be classified as a low risk site.

- The soil in the vicinity of the UST consists of low hydraulic conductivity silty clays ( $10^{-3}$  m/day) to glacial till ( $10^{-4}$  m/day).
  - The water supply well, located within 1,000 feet of the UST, is protected by a steel casing and approximately 200 feet of diverse stratigraphic units, some of them being aquitards.
  - The groundwater does not qualify as a protected water source nor is it used as a private water supply source.
14. The subsurface soil consists of clayey silt. Beginning at grade and continuing into the subsurface, the clayey silt has a thickness of 20 to 25 feet. The clayey silt is consistent and has no discontinuities as evidence by four on-site borings. The clayey silt is at least 3 meters (9.84 feet) thick. The hydraulic conductivity of this unit ranges from  $0.0068$  m/day to  $0.00804$  m/day.

The analytical data indicates that the subsurface soil did not exceed the IDNR soil action level of 100 mg/kg TPH. Even though a PID reading for MW-3 ( $15' - 17'$ ) indicated 141 ppmv of total volatile organic compounds, the laboratory soil analytical data indicated non-detect TPH levels. The PID is used as a survey tool to assist the field person in the determination of sample collection for laboratory analysis.

The clayey silt is underlain by a glacial till. According to Freeze & Cherry (1979), glacial till hydraulic conductivities range from  $10^{-4}$  m/day to  $10^{-3}$  m/day. The glacial till is continuous. This stratigraphic unit is an aquitard which impedes the infiltration of groundwater to underlying units. This glacial till is between the impacted groundwater zone (a non-protected public and private water source) and a protected groundwater source. Furthermore, the Marley Pump company does have a water supply well within 1,000 feet of the UST. This well is 240 feet deep and is encased in steel. Marley Pump has the water tested for volatile organic compounds. The levels were non-detect.

The substance which needs to be addressed is gasoline. Gasoline consists of a wide variety of hydrocarbons. Benzene, ethylbenzene, toluene and xylene (BTEX) will be used as surrogate parameters for the wide variety of hydrocarbons found in gasoline. Although biodegradable, gasoline may persist in the environment while adsorbed on soil particles, floating on groundwater as a separate phase liquid, or dissolved in the groundwater. Gasoline constituents may migrate, however, the rate of migration is controlled by the geology of the impacted area.

Physicochemical characteristics of gasoline and BTEX compounds are presented below:

| CHEMICAL             | FLASH POINT (°F) | FLAMMABLE LIMITS (%) | DENSITY (at 20°C) | SOLUBILITY (% at 20°C) | VAPOR PRESSURE (mm Hg) | HENRY'S LAW CONSTANT |
|----------------------|------------------|----------------------|-------------------|------------------------|------------------------|----------------------|
| gasoline             | -36              | 1.3 - 7.4            | 0.73              | NA                     | 383                    | NA                   |
| benzene              | 12               | 1.3 - 7.1            | 0.88              | 0.18                   | 75                     | 240                  |
| toluene              | 40               | 1.3 - 7.1            | 0.87              | 0.05                   | 22                     | 330                  |
| ethylbenzene         | 59               | 1.0 - 6.7            | 0.87              | 0.02                   | 7.1                    | 350                  |
| xylene (all isomers) | 81 - 90          | 1.0 to 7             | 0.86 to 0.88      | immiscible             | 9                      | not applicable       |

Due to the low permeability of the soils, the migration potential of these constituents is low.

## B. LOW RISK SITE CONDITIONS

1. Soil. 100 mg/kg TPH

The soil analytical data indicated that the 100 mg/kg action level for total organic hydrocarbons had not been exceeded.

Groundwater: Benzene - 0.005 mg/l  
Ethylbenzene - 0.7 mg/l  
Toluene - 2.42 mg/l  
Xylene - 12 mg/l

Groundwater analytical results for monitoring well MW-1 indicate that BTEX constituents were not present in the groundwater. Both benzene and ethylbenzene constituents were below the laboratory detection limits. Both Toluene and Xylene, 0.0006J, were detected but below the laboratory detection limits of 1.0 ug/l. Therefore, IDNR action levels were not exceeded.

Groundwater analytical results for MW-2 indicated the presence of BTEX constituents in the groundwater. Benzene, 0.168 ppm, exceeded the IDNR action level of 0.005 ppm. Toluene, 0.0218 ppm, did not exceed the IDNR action level. Ethylbenzene, 0.0036J ppm, did not exceed the IDNR action level. Xylene, 0.175 ppm, did not exceed the IDNR action level.

Groundwater analytical results for MW-3 indicated the presence of BTEX constituents. For the October 1993 sampling period, the following analytical results were recorded. Benzene, 0.0079 ppm, exceeded IDNR action level. Ethylbenzene, 0.0029 ppm, did not exceed the IDNR action level. Toluene, 0.0006J ppm, did not exceed the IDNR action level. Xylene, 0.0006J ppm, was detected, however it was below the laboratory detection limits.

On January 6, 1994, MW-3 was re-sampled. The following analytical results were recorded. Benzene was not detected nor did it exceed the IDNR action level. Ethylbenzene was not detected and did not exceed the IDNR action level. Toluene, 0.0015 ppm, did not exceed the IDNR action level. Xylene was not detected and did not exceed the IDNR action level.

This well was re-sampled because the first round of groundwater sampling (September 1992) indicated that benzene was not detected in MW-3. This monitoring well, in addition to others, were sampled again in October 1993. Benzene exceeded the IDNR action level. Because of this inconsistency in benzene levels, this well was sampled in January 1994. Benzene was not detected during this sampling round. Therefore, benzene levels below IDNR action levels should be the norm for this well.

Groundwater analytical results for MW-4, the southernmost well, were all non-detect. Therefore, the transition zone or the "0" line has been established.

Of the four groundwater monitoring well results, only one well, MW-2, exceeded the IDNR action level for benzene. All other parameters (toluene, ethylbenzene, and xylene) have not exceeded the IDNR OA-1 action levels.

High risk conditions do not occur at this site. Please see answer to question 1 - 14, High Risk Classification, for further details of why high risk conditions do not occur at this facility.

2. High risk conditions do not exist at this site. See answers to questions 1 - 14 for further information of why high risk conditions do not occur at this facility.

C. NO ACTION REQUIRED SITE CONDITIONS

1. Soil -- The soil analytical data indicated that the 100 mg/kg action level for total organic hydrocarbons has not been exceeded. Therefore, no action is required for the soil.

Groundwater -- Laboratory analytical results indicate that benzene, the only petroleum hydrocarbon constituent, has exceeded the IAC action level of 0.005 mg/l in MW-2 (0.168 mg/l). All other petroleum constituents are either below the laboratory detection limits or the IDNR action levels (See Appendix X for tabulated analytical data).

Additionally, the site has been classified as a low risk site. Please refer to the answers given in questions 1 - 14, High Risk Classification, for further details.

**APPENDIX XIV (A3)**  
**TREATMENT TECHNOLOGY EVALUATION**

This is not classified as high risk. Therefore, this section has not been completed.



**APPENDIX XIV (A4)**  
**BEST AVAILABLE TECHNOLOGY**

This is not classified as high risk. Therefore, this section has not been completed.

APPENDIX XIV (A4)  
BEST AVAILABLE TECHNOLOGY

B. Low Risk Site Correction Action

The approximate volume of contaminated groundwater present is equal to 341.93 gallons.  
Volume of contaminated groundwater (MW-2) = 341.93

Using the only monitoring well which exceeded the IDNR action level, MW-2, the volume was calculated. A 25' x 25' (625 ft<sup>2</sup>) area around MW-2 and a 10' x 10' (100 ft<sup>2</sup>) area was anticipated to be impacted around the well. The water column height of 4.99 feet (MW-2) was used to determine the impacted volume of water around the well by multiplying the water column height by the area and dividing by the conversion factor - 7.48 gal/ft<sup>3</sup>.

$(\text{conc. of benzene} - \text{mg/l}) \cdot (\text{volume of contaminated groundwater} - \text{ft}^3) \cdot 3.785 \text{ L/gal} \cdot$   
 $(\text{kg}/1000 \text{ mg}) \cdot (2.25 \text{ lbs/kg}) \cdot \text{density of gasoline (ft}^3/0.73 \text{ lbs}) \cdot 7.48 \text{ gal/ft}^3 = \text{volume of}$   
*contaminated groundwater for a specific well*

XIV(B2)  
BEST MANAGEMENT PRACTICE

1. Leak detection: Leak detection activities will not be implemented for the 500-gallon abandoned in place tank. All liquid material was removed from this tank and sand was put into its place. The tank was closed during August 1987 - November 1987.

The new UST system has several leak detection monitors:

- Vapor probes in vapor monitoring wells - monitored by Red Jacket RLM 9000.
  - Liquid refraction sensor in the interstitial space monitored by Red Jacket RLM 9000.
  - Automatic tank gauging - P/N 4001955 with Red Jacket RLM 99000.
  - Cathodic protection internally and externally. Tests performed 2/93 and due in 2/96.
  - Secondary containment - sealed concrete pad and 4-inch concrete curbing.
2. Marley Pump Company uses all the leak detection monitors in conjunction with regularly scheduled cathodic protection checks and/or tank tightness tests as a precautionary measure. Furthermore, four monitoring wells will be used to detect impact to the subsurface.
  3. Any soil or groundwater sampling conducted by Marley Pump company and its consultant, will abide by a QA/QC document which follows or is more stringent than those required by the IDNR. Vapor analysis of confined spaces (the manhole located southwest of the facility or other openings accessible to conduct the vapor survey) will be conducted when on-site monitoring occurs.

#### XIV(B3) MONITORING PLAN

Monitoring Plan - Marley Pump Company's consultant will collect groundwater elevation data and groundwater samples from the four on-site monitoring wells. The elevation data will help determine the groundwater flow direction and if any directional changes occur due to seasonal changes in the groundwater elevation. These four wells are located in such a way that they are consistent with the current groundwater flow direction. Data from these sampling points will help determine whether impact is occurring to the subsurface. This data combined with the calculated hydraulic conductivities will aid in the determination of migration potential. If increases/decreases to the contaminant level occur and/or changes in the groundwater flow direction occur, then recommendations for change will be made accordingly.

The Marley Pump Company will follow the IDNR'S proposed monitoring schedule as suggested in the SCR. However, Marley Pump Company reserves the right to request for the reduction in monitoring frequency or number of monitoring wells if the request is justified by the following IDNR requirements:

- Migration potential of the released substance,
- Potential impact on the environment and public health if migration of the soil or groundwater contamination occurs,
- Area hydrogeologic characteristics,
- Soil permeability,
- Transmissivity, and
- Contamination concentrations and persistence.

If Marley Pump company or its consultant feel that the monitoring wells are not producing quality data, then modification will be made accordingly.

M&E proposes the following schedule to conduct groundwater monitoring after approval of the SCR.

| Year | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 |
|------|-----------|-----------|-----------|-----------|
| 199- | NR        | X         | X         | X         |
| 199- | NR        | X         | X         | X         |
| 199- | NR        | X         | X         | X         |
| 199- | NR        | X         |           | X         |
| 199- | NR        | X         |           | X         |
| 199- | NR        | X         |           | X         |

NR - Not required by IDNR.

Each year the results will be reviewed and a determination of sampling reduction and justification will be made.

**APPENDIX A**  
**SUPPLEMENTAL INFORMATION**

I. Site History

C. Site Owner Chronology, Contract Agreements, Page 5 of 20

DATE OF  
COUNTRY 16  
16-Final  
TO  
March 1, 1971  
May 11, 1971

CONNECTED OBJECT NO. 4250  
PROJECT: New Office and Plant Facility  
ADDRESS: 500 E. 39th St., Davenport, Iowa  
OWNER: Red Jacket Mfg. Co.  
CONTRACTOR: Henry R. Schaefer Co.  
RECEIVED DATE November 5, 1969

RECEIVED  
MAY 12 1971

TO RED JACKET MFG. CO.

OWNER

In accordance with the Contract and the Application for Payment the Contractor is entitled to payment in the amount of \$100,000.00.

The present status of the account for this Contract is as follows:

|                            |    |      |
|----------------------------|----|------|
| ORIGINAL CONTRACT SUM      | \$ |      |
| CHANGE ORDERS              |    |      |
| TOTAL ADDITIONS            | \$ |      |
| SUB TOTAL                  | \$ |      |
| TOTAL DEDUCTIONS           | \$ |      |
| TOTAL CONTRACT TO DATE     | \$ |      |
| BALANCE TO PAY             | \$ | None |
| TOTAL COMPLETED TO DATE    | \$ |      |
| MATERIALS STORED           | \$ | None |
| TOTAL COMPLETED AND STORED | \$ |      |
| LESS RETAINAGE             | \$ | None |
| TOTAL EARNED LESS          |    |      |
| RETAINAGE                  | \$ |      |
| LESS PREVIOUS              |    |      |
| PAYMENTS                   | \$ |      |
| THIS CERTIFICATE           | \$ |      |

Date Paid \$  
Price O.R.  
Est. O.R.  
Where No.  
Invoice Date  
Invoice No.  
Gross Amt. \$  
Tax  
Net Amt. \$  
App. No.  
Date

This certificate is not negotiable, it is payable only to the payee named herein and its issuance, payment and acceptance are without endorsement or assignment of the Owner or Contractor under their Contract. IT IS A GOOD GUARANTEE FOR PAYMENT or other application forms containing documentary evidence of payment for work completed do not accompany this Certificate, the Contractor shall provide the following certification by signing below.

State of Iowa  
County of Scott

I, the undersigned, certify that the Work covered by this Certificate for Payment has been completed in accordance with the Contract Documents, that all items shown on the Application for Payment and on which payments have been made or have now been made and that the current payment shown herein is now due.

Contractor: Henry R. Schaefer Co.

Subscribed and Sworn to before me this

Eleventh day of May 1971

Notary Public: *Daniel B. Hartman*

My Commission expires: July 4, 1972

By: *C. B. Schaefer* May 11, 1971

NOTARY PUBLIC  
NOTARY PUBLIC  
THE AMERICAN NOTARY OF ILLINOIS  
THE AMERICAN NOTARY OF ILLINOIS

# WARRANTY DEED

Know All Men by These Presents: That WILLIE WESTERFIELD and JOHN E. WESTERFIELD, her husband, JOHN E. WESTERFIELD, JR., a Single Person, MINOR CHILDREN OF JOHN E. WESTERFIELD and STEPHEN T. WESTERFIELD and PEGGY WESTERFIELD, his wife

of STATE County, State of IOWA In consideration of the sum of ONE HUNDRED AND SEVENTY DOLLARS to the said PRO JACOB MANUFACTURING COMPANY, AN IOWA CORPORATION

the following described real estate, situated in Scott County, Iowa, to-wit:

Part of the Northwest Quarter of Section 12, Township 78 North, Range 3 East of the 5th P.M., being more particularly described as follows: Commencing at the Northwest corner of the Northwest Quarter of said Section 12; thence North 88 degrees 54 minutes 30 seconds East 430 feet along the North line of the Northwest Quarter of said Section 12 to the point of beginning of the tract hereinafter described; thence continuing North 88 degrees 54 minutes 30 seconds East 1062.00 feet along the North line of the Northwest Quarter of said Section 12; thence South 31 degrees 46 minutes East 810.57 feet; thence South 18 degrees 53 minutes 10 seconds East 188.89 feet; thence South 88 degrees 53 minutes West 627.34 feet; thence South 194 feet; thence South 88 degrees 53 minutes West 500.00 feet; thence North 196 feet; thence South 88 degrees 53 minutes West 110.38 feet; thence North 686.5 feet to the point of beginning; (contains 22.67 acres, more or less), situated in the City of Davenport, Scott County, Iowa.

And the grantors do hereby Covenant with the said grantees, and successors in interest, that said grantees hold and real estate by title in fee simple, that they have good and lawful authority to sell and convey the same, that said grantees are Free and Clear of all Liens and Encumbrances whatsoever except as may be shown stated; and said grantees do hereby warrant and defend the said premises against the lawful claims of all persons whatsoever, except as may be shown stated.

Each of the undersigned hereby relinquishes all rights of dower, homestead and distributive share in and to the above described premises.

Words and phrases herein, including abbreviations, shall be construed as in the original or filed number, and as written or printed matter, according to the meaning.

Signed this 8th day of February 1968

STATE OF IOWA, FLORIDA

COUNTY OF IOWA

In this SE day of February A.D. 1968, before me, the undersigned, a Notary Public in and for said County, to wit: Scott, County, Iowa, personally appeared WILLIE WESTERFIELD and JOHN E. WESTERFIELD, her husband,

and they acknowledged to me that they executed the foregoing instrument for the purposes and consideration therein expressed.

Notary Public in and for said County

My Commission Expires: February 1, 1970

*John E. Westerfield, Jr.*  
 JOHN E. WESTERFIELD, JR.  
*Peggy Westerfield*  
 PEGGY WESTERFIELD





STATE OF MISSISSIPPI COUNTY, of: FAIRBANKS

On the 11th day of February, A. D. 1952, before me, the undersigned, a Notary Public in and for the State of Mississippi, personally appeared JOHN H. WESTERFIELD, JR., a Single Person

who is known to be the identical person named in and who executed the foregoing instrument, and acknowledged that they executed the same as their voluntary act and deed.

My Commission Expires:

My Commission Expires March 1, 1952

Imogene J. Wilson

My Commission Expires March 1, 1952

STATE OF FLORIDA COUNTY, of: FLORIDA

On this 22nd day of January, A. D. 1952, before me, the undersigned, a Notary Public in and for said County, in and State, personally appeared STEPHEN T. WESTERFIELD and and PEGGY WESTERFIELD, his wife

who is known to be the identical person named in and who executed the foregoing instrument, and acknowledged that they executed the same as their voluntary act and deed.

My Commission Expires March 1, 1952

Wilson C. Ballou

Notary Public in and for the State of Florida



3841

Warranty Deed

Halls, Westerfield, et al

TO

Real Estate Manufacturing

Company

Witnessed this

day of February, 1952

at St. Louis, Mo.

By Stephen T. Westerfield

Notary Public

Filed for record on 28th day

of March, A. D. 1952

Book 205 of Records in page 143

Book 205 of Records in page 143

County Clerk

Witnessed this

day of February, 1952

at St. Louis, Mo.

Witnessed this

day of February, 1952

at St. Louis, Mo.

Witnessed this

day of February, 1952

at St. Louis, Mo.

Witnessed this

day of February, 1952

at St. Louis, Mo.

W. C. Ballou

**APPENDIX B**  
**SUPPLEMENTAL INFORMATION**

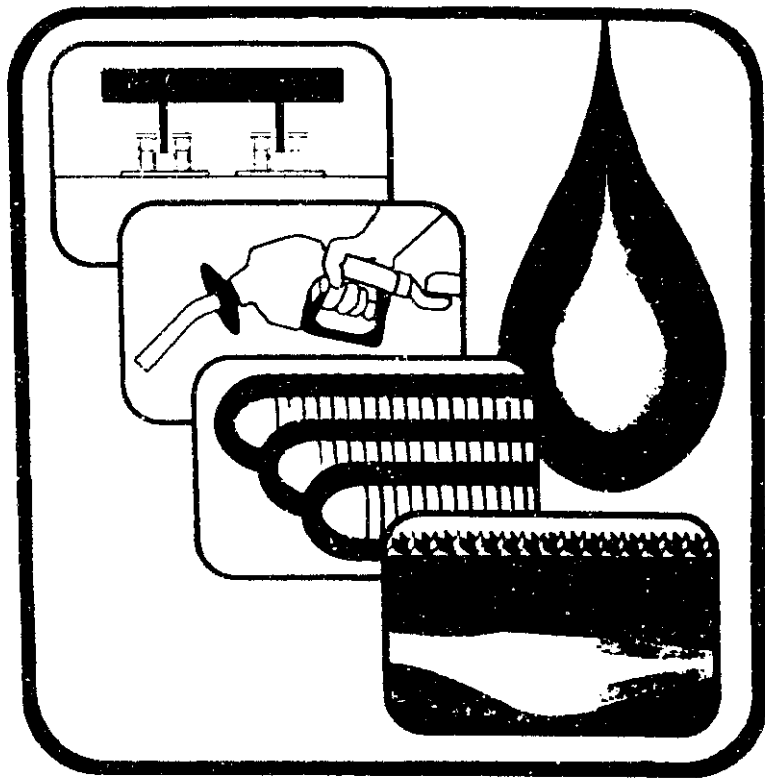
I. Site History

- D. Describe the circumstance of discovery of the release, Page 6 of 20  
Seneca Environmental Service, Inc. Report

ATTACHMENT - SENECA ENVIRONMENTAL SERVICES INC. REPORT

# SENECA

ENVIRONMENTAL SERVICES, INC.



Des Moines • Davenport • Omaha

**SENECA**  
ENVIRONMENTAL SERVICES

Seneca Environmental Services, Incorporated  
5112 Fremont Avenue • Davenport, Iowa 52807 • (319) 386-2522

April 3, 1992

Mr. Ed Dunning  
Marley Pump Company  
500 East 59th Street  
Davenport, Iowa 52807

SUBJECT: SITE INVESTIGATION FOR PLACEMENT OF  
UNDERGROUND STORAGE TANKS FOR  
MARLEY PUMP COMPANY  
500 EAST 59TH STREET, DAVENPORT, IOWA

Dear Mr. Dunning:

We are submitting this letter summarizing our observations of the site investigation and soil testing at the above-referenced location.

On March 18, 1992, Seneca Environmental Services performed a site investigation at Marley Pump Company in the vicinity of the proposed underground storage tank location. The investigation involved the advancement of a borehole to a depth of 35 feet and obtaining a water sample from the borehole. A representative of Seneca Environmental Services was on-site to observe the activities, classify the soils, and to obtain the soil and water samples. The location of the borehole is indicated on the attached site plan map.

Continued on Page #2



Mr. Ed Dunning  
Harley Pump Company  
March 26, 1992

A soil sample was obtained from the seven-foot depth of the borehole for laboratory analysis. A water sample was obtained from the 20-foot depth of the borehole for analysis. The samples were packaged, labeled and placed in iced storage for delivery to NRT Midwest Laboratories, Inc., located in Cedar Falls, Iowa, for analysis of benzene, toluene, ethyl benzene, and total xylenes (BTEX), for total petroleum hydrocarbons (TPH) as gasoline, and for total extractable hydrocarbons (TEH) as found in diesel fuel. A chain-of-custody form accompanied the samples from the sampling site to the laboratory. The results of the laboratory analyses are listed in the appendix of this letter.

Based upon the preliminary field work and the laboratory results for the soil and water samples, it appears that the soil in the vicinity of the proposed tank excavation is not contaminated with hydrocarbons from gasoline or diesel. The analytical laboratory results for the soil sample are below the current Iowa Department of Natural Resources (IDNR) action guidelines of 100  $\mu\text{g}/\text{kg}$  (ppm) for TPH and TEH. The laboratory analytical results for the water sample were found to be 610  $\mu\text{g}/\text{L}$  (ppb), which is above the IDNR action guideline of 5.0  $\mu\text{g}/\text{L}$  (ppb).

Mr. Ed Dunning  
Marley Pump Company  
March 26, 1982

According to the soil boring log, the soils in the vicinity appear to be tight, firm silty clays with low permeability. The hydraulic conductivity of such soils ranges between  $4 \times 10^{-5}$  cm/sec and  $10^{-7}$  cm/sec (Freeze, et al), with an average grain-size of 0.004 mm (Pettijohn, et al). Although the groundwater in the vicinity of the tank pit appears to be impacted at the 20-foot depth, the soils at the seven-foot depth do not appear to have been affected by any hydrocarbon impact. The seven-foot depth is slightly below the level of the bottom of the tank pit.

A large metal pipe runs through the tank pit excavation from a water well located approximately 20-feet west of the site in the down-gradient direction. The pipe is approximately two-feet below the surface of the ground and is set directly in the clay soils, with no sand backfill around it. The pipe is situated at a level above the midline of the proposed tanks and the tanks are of double-valled construction. It is not likely that this pipe will act as a conduit for any hydrocarbon migration if a leak occurs in one of the underground storage tanks. The monitoring system which will be installed will indicate any fuel loss from the tanks or lines and the leak would be mitigated before product could migrate along the pipe line.



Mr. Ed Dunning  
Marley Pump Company  
March 26, 1992

Due to the fact that Seneca Environmental Services has identified the presence of certain hazardous substances or contaminants, you should be aware that you have, or may have, the duty to report said findings to federal, state, or local authorities in a timely manner. Unless otherwise informed, Seneca Environmental Services assumes that said reporting has been properly completed by you.

You should send a copy of this letter to the IDNR for their project file regarding underground storage tank activities at your facility. Please send it to:

Mr. Verne Schunk  
Iowa Department of Natural Resources  
Underground Storage Tank Division  
Wallace State Office Building, 5th Floor  
500 East Grand Avenue  
Des Moines, Iowa 50319.

One copy of this letter should be sent to GAS for reimbursement purposes. Please send it to:

Mr. Neil Searcy  
GAS  
P.O. Box 3837  
Des Moines, Iowa 50322.

Continued on Page #6

Mr. Ed Dunning  
Harley Pump Company  
March 26, 1992

Seneca Environmental Services appreciates the opportunity of addressing your underground storage tank needs. If you have any questions concerning this letter or if we can be of further assistance, please give us a call.

Sincerely,  
Seneca Environmental Services

*Heather Morton-Davis*

Heather Morton-Davis  
Registered Groundwater Professional, #1252

#### REFERENCES

- Freeze, Allan R. and Cherry, John A., 1979, Groundwater, Prentice-Hall, Englewood Cliffs, New Jersey, 604 pp.
- Pettijohn, F.J., 1975, Sedimentary Rocks, Harper & Row, New York, New York, 628 pp.

**APPENDIX A**

**SOIL BORING RECORD**

# SENECA Environmental Services Inc.

Project Macleay Pump Hole/Wall No. BH1  
 Location DAYDORSET, Iowa Borehole diameter 7.5  
 Job No. 8450 Total Depth of Hole 23.8 feet  
 Geologist/Engineer \_\_\_\_\_ Depth to Water 20.0  
 Drill Crew White/Strickland Date Completed 3/18/92

| DEPTH<br>IN FEET | WELL CONSTRUCTION DETAIL | PERM<br>VAL | SOIL<br>TYPE | LITHOLOGY | DESCRIPTION                                                                        |
|------------------|--------------------------|-------------|--------------|-----------|------------------------------------------------------------------------------------|
| 0                |                          |             |              | OL        | Grass - Topsoil                                                                    |
| 2                |                          |             |              | CL        | Silty Clay, brown, no odor                                                         |
| 4                |                          |             |              |           | Silty Clay, slight odor, dark gray                                                 |
| 6                |                          |             |              |           |                                                                                    |
| 8                |                          |             |              | ML        | Clayey Silt, light gray, no odor                                                   |
| 10               |                          |             |              |           |                                                                                    |
| 12               |                          |             |              |           | Clayey Silt, light brown with fine grains<br>of sand, no odor, damp                |
| 14               |                          |             |              |           |                                                                                    |
| 16               |                          |             |              |           |                                                                                    |
| 18               |                          |             |              | CL        | Silty Clay, dark gray, embedded with fine<br>to medium grained sand, no odor, damp |
| 20               | ▽                        |             |              | CL        | Clay, gray-green, wet, no odor                                                     |
| 22               |                          |             |              |           |                                                                                    |
| 24               |                          |             |              |           |                                                                                    |
| 26               |                          |             |              |           |                                                                                    |
| 28               |                          |             |              |           |                                                                                    |
| 30               |                          |             |              |           |                                                                                    |

Total Depth - 23.8 Feet  
 Soil Sample - S-4-BH1, S-7-BH1  
 S-14-BH1  
 Water Sample - W-BH1

APPENDIX B

LABORATORY ANALYTICAL REPORTS

FOR

SOIL SAMPLES



NATIONAL  
ENVIRONMENTAL  
TESTING, INC.

NET Midwest, Inc.  
Cedar Falls Division  
704 Enterprise Drive  
P.O. Box 885  
Cedar Falls, IA 50613  
Tel: (319) 277-2401  
Fax: (319) 277-2438

## ANALYTICAL REPORT

Ms. Heather Morton-Davis  
SENECA ENVIRONMENTAL SERV.  
5113 Tremont Avenue  
Davenport, IA 52807

03/30/1992

Sample No.: 163005  
Job Number: 92.2095

Sample Description: S-7 BW-1 Harley Pump  
SOIL

Date Taken: 03/18/1992

Date Received: 03/19/1992

| Parameter                      | Result | Units | Date Analyzed/Analyst |
|--------------------------------|--------|-------|-----------------------|
| Total Extractable Hydrocarbons | <10.   | ug/g  | 03/27/1992 hlk        |
| VOLATILES - BTEX (NONAQUEOUS)  |        |       |                       |
| Benzene                        | <0.5   | ug/g  | 03/24/1992 mkk        |
| Ethylbenzene                   | <0.5   | ug/g  | 03/24/1992 mkk        |
| Toluene                        | <0.5   | ug/g  | 03/24/1992 mkk        |
| Xylenes, Total                 | <0.5   | ug/g  | 03/24/1992 mkk        |
| Total Hydrocarbons             | <10.   | ug/g  | 03/24/1992 mkk        |

Sample introduction performed in reference to EPA Method 8030 (purge & trap). Analysis performed in reference to EPA Method 8015 for volatile organics using flame ionization detection. (Iowa Method OA-1, Revision 7/01/91).

Method Detection Limits: Benzene <0.5 ug/g; Toluene <0.5 ug/g; Xylenes, Total <0.5 ug/g; Total Hydrocarbons <10. ug/g; Ethyl Benzene <0.5 ug/g.

Extractable Hydrocarbons are extracted in accordance with EPA Method 3550 (sonication extraction). Analysis is performed in reference to EPA Method 8100 using flame ionization detection. (Iowa Method OA-2, Revision 7/01/91). Method Detection Limit <10. ug/g

  
R. L. Sindert  
Project Manager

received  
APR 2

**NET****NATIONAL  
ENVIRONMENTAL  
TESTING, INC.**NET Midwest, Inc.  
Cedar Falls Division  
704 Enterprise Drive  
P.O. Box 825  
Cedar Falls, IA 50613  
Tel (319) 277-3401  
Fax (319) 277-3425**ANALYTICAL REPORT**Ms. Heather Morton-Davis  
SENECA ENVIRONMENTAL SERV.  
5113 Tremont Avenue  
Davenport, IA 52807

03/30/1992

Sample No.: 163006  
Job Number: 92.2095Sample Description: W-BH1  
WATER

Marley Pump

Date Taken: 03/18/1992

Date Received: 03/19/1992

|                                 | <u>Result</u> | <u>Units</u> | <u>Date Analyzed/Analyst</u> |
|---------------------------------|---------------|--------------|------------------------------|
| <b>VOLATILES - BTEX (WATER)</b> |               |              |                              |
| Benzene                         | 0.61          | mg/L         | 03/20/1992 aka               |
| Ethylbenzene                    | 0.25          | mg/L         | 03/20/1992 aka               |
| Toluene                         | 0.29          | mg/L         | 03/20/1992 aka               |
| Xylenes, Total                  | 0.25          | mg/L         | 03/20/1992 aka               |
| Total Hydrocarbons              | 3.7           | mg/L         | 03/20/1992 aka               |

Sample introduction performed in reference to EPA Method 5030 (purge and trap). Analysis performed in reference to EPA Method 8015 for volatile organics using flame ionization detection. (Iowa Method OA-1, Revision 7/01/91).

Method Detection Limits: Benzene <0.002 mg/L; Toluene <0.002 mg/L;  
Xylenes, Total <0.002 mg/L; Ethyl Benzene <0.002 mg/L  
Total Hydrocarbons <0.10 mg/L.

  
R. L. Sindert  
Project Manager



**NET Midwest, Inc.**  
Cedar Falls Division  
704 Enterprise Drive  
P.O. Box 625  
Cedar Falls, IA 50613  
Tel (319) 277-3401  
Fax (319) 277-2425

## CHAIN OF CUSTODY

|                                                    |                                  |
|----------------------------------------------------|----------------------------------|
| Client: <del>Seacoast Environmental Services</del> | Project Name: <i>Marley Pump</i> |
| Send report to: <i>Heather Davis</i>               | <i>500 E. 59th St</i>            |
| Address: <i>5113 Tremont Ave.</i>                  | <i>Davenport, Ia 52807</i>       |
| Telephone: <i>319-386-2552</i>                     | Collected by: <i>Matt White</i>  |

| Collection Information |                   |      |          |   |   |             |                   | Parameters |    |     |
|------------------------|-------------------|------|----------|---|---|-------------|-------------------|------------|----|-----|
| Sample ID              | Sampling Location | Date | Time     | A | B | Sample Type | No. of Containers | TPH        | OC | TEX |
| 37BH-1                 | BH-1              | 3/28 | 12:30 AM | X |   | Soil        | 1                 | X          | X  |     |
| 38BH-1                 | BH-1              | 3/28 | 11:00 AM | X |   | Water       | 3                 |            |    | X   |

REMARKS

| Relinquished by:            |  | Date Time     |  | Received by:                             |  | Date Time |  |
|-----------------------------|--|---------------|--|------------------------------------------|--|-----------|--|
| <i>Med With</i>             |  | <i>3/1/82</i> |  |                                          |  |           |  |
| Shipping Notes/Lab Comments |  |               |  | Received for NET Midwest by:             |  |           |  |
|                             |  |               |  | <i>Spencer, Brian</i> <i>3/1/82 8:00</i> |  |           |  |
| Sample Field Filtered:      |  | ___ Yes       |  | ___ No                                   |  |           |  |
| Seals Intact Upon Receipt:  |  | ___ Yes       |  | ___ No                                   |  | ___ N/A   |  |



## APPENDIX C SUPPLEMENTAL INFORMATION

### II. Current Site Conditions

#### B. Description of the existing UST System, Page 6 of 20.

Operational Status of Tank No. 1: Contains no product and is out of use. The UST tank (fill lines, product lines and/or dispensers are not part of the UST system) was abandoned in place (e.g. liquid was removed and sand was placed inside the tank) during the time period August 1987 through November 1987.

Operational Status of Tanks 2, 3, and 4: Three new USTs were installed in March 1992 for Marley Pump Company's Engineering Lab. The tanks are constructed of double walled steel (Stip3) and have a factory coal tar epoxy coating. Each tank has a capacity of 560 gallons. Tank 2, Registration Number 16157, stores 532 gallons of unleaded gasoline and Tank 3, Registration Number 16158, stores 532 gallons of unleaded gasoline. Tank 4, Registration Number 16159, stores 76 gallons of unleaded gasoline and 432 gallons of methanol. The tanks were filled on October 5, 1992. All the USTs are operational but no fuel is dispensed; the fuel is recirculated back to the tank. Additional information of interest:

- Vapor probes are in each vapor monitoring wells (monitored by Red Jacket/Marley) - RLM 9000.
- Liquid refraction sensors in the interstitial space between tank walls - RLM 9000.
- Automatic tank gauging. Hard copy printed and retained for Marley's records.
- Internal and external cathodic protection. Cathodic protection test was conducted in February 1993 and is scheduled to be tested again in February 1996.
- Tank piping is above ground and surrounded by a sealed concreted pad and four-inch concrete curb.

*(The tanks are numbered in coordination with IDNR Section II-B - Description of the existing UST system).*

**APPENDIX D**  
**SUPPLEMENTAL INFORMATION**

**HYDRAULIC CONDUCTIVITY - FIELD AND LABORATORY**

SUMMARY OF EQUATIONS FOR DETERMINING HYDRAULIC CONDUCTIVITY, K:

$$K = \frac{R^2}{2L(T(2) - T(1))} \cdot \ln\left(\frac{L}{R}\right) \cdot \ln\left(\frac{H(T(1))/H(T(0))}{H(T(2))/H(T(0))}\right) \quad \text{EQUATION (1)}$$

WHERE:

- K = HYDRAULIC CONDUCTIVITY
- L = LENGTH OF WELL SCREEN
- R = RADIUS OF WELL
- T = TIME IN SECONDS FROM START OF TEST
- H = DIFFERENCE IN WATER HEAD BETWEEN WATER LEVEL AT TIME "T" AND THE STATIC WATER LEVEL

1) MONITORING WELL MW-1

$$K = \frac{(0.08)^2}{2 \cdot 12.18(12,600 - 3,600)} \cdot \ln\left(\frac{12.18}{0.08}\right) \cdot \ln\left(\frac{0.31}{0.06}\right) \quad \text{EQUATION (2)}$$

$$\begin{aligned} K &= 2.59 \times 10^{-7} \text{ ft/sec} \\ K &= 7.88 \times 10^{-6} \text{ cm/sec} \\ K &= 7.88 \times 10^{-9} \text{ m/sec} = 6.74 \times 10^{-6} \text{ m/day} \\ T &= 2.86 \times 10^3 \text{ m}^2/\text{sec} \end{aligned} \quad \text{EQUATION (3)}$$

2) MONITORING WELL MW-2

$$K = \frac{(0.08)^2}{2 \cdot 7.18(9,000 - 3,600)} \cdot \ln\left(\frac{7.18}{0.08}\right) \cdot \ln\left(\frac{0.30}{0.14}\right) \quad \text{EQUATION (4)}$$

$$\begin{aligned} K &= 3 \times 10^{-7} \text{ ft/sec} \\ K &= 9.3 \times 10^{-6} \text{ cm/sec} \\ K &= 9.3 \times 10^{-9} \text{ m/sec} = 8.04 \times 10^{-6} \text{ m/day} \\ T &= 2.2 \times 10^3 \text{ m}^2/\text{sec} \end{aligned} \quad \text{EQUATION (5)}$$

3) MONITORING WELL MW-3

$$K = \frac{(0.08)^2}{2 \cdot 11.6(9,000 - 4,800)} \cdot \ln\left(\frac{11.6}{0.08}\right) \cdot \ln\left(\frac{0.41}{0.29}\right) \quad \text{EQUATION (6)}$$

$$\begin{aligned} K &= 2.6 \times 10^{-7} \text{ ft/sec} \\ K &= 7.9 \times 10^{-4} \text{ cm/sec} \\ K &= 7.9 \times 10^{-6} \text{ m/sec} \\ T &= 7.33 \times 10^4 \text{ m}^2/\text{sec} \end{aligned} \quad \text{EQUATION (7)}$$

$$= 6.83 \times 10^{-5} \text{ m/day}$$

McGraw & Bddy  
Hydraulic Conductivity

90257-01

Boring # MW-2  
Depth 25-28'

Description: CL Gray green silty sandy loam clay with trace organics

w 19%  
γ<sub>s</sub> 111.1 pcf  
G<sub>s</sub> 2.68

Hydraulic Conductivity:  $1.5 \times 10^{-4}$  cm/sec  
@ hydraulic gradient = 6

Tested in accordance with ASTM D 3084-90.

The data gathered for this sample was collected from a Shelby tube. The soil was collected from MW-2, below the silt strata.



JERRY E. BRANSTAD, GOVERNOR

STATE OF

IOWA

File Name

RECORD COPY

867584

Initials

DEPARTMENT OF NATURAL RESOURCES

LARRY J. WILSON, DIRECTOR

## TRANSMITTAL FORM



TO: Dan Van Zuden  
Harley Pump Company  
501 E. 59th  
Des Moines, IA 50317

FROM: Wildlife DivisionPhone: 515-281-6784DATE: 4-25-94

Enclosed or attached in the following:

| No. | Description            |
|-----|------------------------|
| 1   | 3-20-94 SCR Re. letter |
| 1   | SCR check list         |
|     |                        |
|     |                        |

☐ For your information and use☒ As requested☐ Review and comment☐ Necessary action☐ Please return☐ As noted below

REMARKS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Printed on  
Recycled Paper

543-8924

|                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Name of the person or organization to whom the package is to be delivered.<br>2. Address of the person or organization to whom the package is to be delivered.<br>3. City and State to which the package is to be delivered.<br>4. Zip Code to which the package is to be delivered.     | 5. Name of the person or organization to whom the package is to be delivered.<br>6. Address of the person or organization to whom the package is to be delivered.<br>7. City and State to which the package is to be delivered.<br>8. Zip Code to which the package is to be delivered.     | 9. Name of the person or organization to whom the package is to be delivered.<br>10. Address of the person or organization to whom the package is to be delivered.<br>11. City and State to which the package is to be delivered.<br>12. Zip Code to which the package is to be delivered.  |
| 13. Name of the person or organization to whom the package is to be delivered.<br>14. Address of the person or organization to whom the package is to be delivered.<br>15. City and State to which the package is to be delivered.<br>16. Zip Code to which the package is to be delivered. | 17. Name of the person or organization to whom the package is to be delivered.<br>18. Address of the person or organization to whom the package is to be delivered.<br>19. City and State to which the package is to be delivered.<br>20. Zip Code to which the package is to be delivered. | 21. Name of the person or organization to whom the package is to be delivered.<br>22. Address of the person or organization to whom the package is to be delivered.<br>23. City and State to which the package is to be delivered.<br>24. Zip Code to which the package is to be delivered. |



TERRY E. BRANSTAD, GOVERNOR

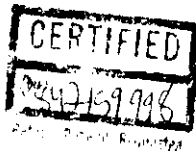
DEPARTMENT OF NATURAL RESOURCES

LARRY J. WILSON, DIRECTOR

CERTIFIED MAIL

March 30, 1994

Bob Best  
 Marley Company  
 1900 Shawnee Mission Parkway  
 Mission Woods, KS 66205



SUBJECT: Revised Site Cleanup Report Review - Marley Pump Company  
 1500 East 59th Street, Davenport, IA  
 Tank Registration No. 7910056 LUST No. ELTS84

Dear Mr. Best:

The department has reviewed the revised Site Cleanup Report (SCR) for the referenced facility. DNR received the report November 5, 1993. Upon review, it has been determined that the SCR is unacceptable. We have enclosed the checklist which identifies the areas requiring additional investigation or clarification. Your consultant, has received a copy of the checklist and can assist you in completion of the SCR. As additional information is obtained, any sections of the SCR which are affected must also be updated to reflect current knowledge and conditions.

Within ninety (90) days of receipt of this letter, please submit a revised SCR with the corrections and additional information indicated on the checklist.

Please notify the department, in writing, if you are unable to meet the above schedule. Provide the reason for the delay and a firm date by which the department will receive the report. In all correspondence regarding this project, include the LUST number which can be found in the Subject heading of this letter. Contact Verne Schunk at 515/281-6704 if you have questions or we may be of assistance.

Sincerely,

VERNE K. SCHRUNK  
 ENVIRONMENTAL SPECIALIST  
 UNDERGROUND STORAGE TANK SECTION

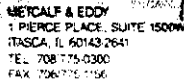
VKS/vks/H884REV.2

cc: Field Office 6  
 Metcalf & Eddy, 10007 W. 67th Street, Kansas City, MO 64152  
 attn: Denise Story



LETTER SHOULD BE  
 RESENT TO:  
 DIRECTOR, FBI  
 500 E. 53RD  
 INDEPENDENCE, MO 64601  
 108601  
 304 535 1411  
 (415) 444-4444  
 (415) 444-4444

|                                                                                 |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BOB BEST<br>HARLEY CG<br>1900 SHAMNEE MISSION PARKWAY<br>MISSION WOODS KS 66205 |  | 1. <input type="checkbox"/> YES or NO to receive the following services for the year 1988:<br>2. <input type="checkbox"/> Automobile's License<br>3. <input type="checkbox"/> Registered Vehicle<br>4. <input type="checkbox"/> ...<br>5. <input type="checkbox"/> ...<br>6. <input type="checkbox"/> ...<br>7. <input type="checkbox"/> ...<br>8. <input type="checkbox"/> ...<br>9. <input type="checkbox"/> ...<br>10. <input type="checkbox"/> ... |
|---------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



1/17/94

TO: Inland Department of  
Natural Resources  
WALLACE STATE OFFICE Bldg  
Deer Haven IA 50544

23

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| 99   | 1    | 1   |
| 100  | 1    | 1   |

8170-5187

Mr. Vera - SHAWK  
LUST COORDINATOR  
Pump Company

WE ARE SENDING YOU

## Abstract

Under 100-1000 cover run

The following table

### Prints

## Summary

7 Copy of letter

### Specifications

Snop dinnings

[illegible]

THESE ARE TRANSMITTED BY CRYSTALLINE

For your information

For approval:

For comments

For your use

As per your request

### 5.2. Review and comments

1

PRINTS RETURNED AFTER LOAN TO US

REMARK 3

Mr. Spunk

INCLUDED ARE THE ANALYTICAL RESULTS FOR MW-3 at  
the HARGLEY PUMP COMPANY. AS STATED IN OUR SCR  
REPORT, MDE DECIDED TO RESUME MW-3 BECAUSE THE  
LABORATORY RESULTS WERE NOT COMPARABLE TO PREVIOUS  
BULK BOUND RESULTS. IF YOU HAVE ANY QUESTIONS,  
PLEASE CALL ME AT (708) 715-6200 x12714

Cupres 30

**Signed**

*Devin Story*  
Notify us at once.

**NET****NATIONAL  
ENVIRONMENTAL  
TESTING, INC.**Cedar Falls Division  
704 Enterprise Drive  
Cedar Falls, IA 50613  
Tel: (319) 277-2401  
Fax: (319) 277-2426**ANALYTICAL REPORT**Denise Story  
METCALF & EDDY, INC.  
One Pierce Place  
Suite 1500-W  
Itasca, IL 60143  
708/775-0300

01/12/1994

NET Job Number: 94.00104

NET Sample Number: 236572

Collected by: Mike Burt

Collectors Phone No.: 708/775-0300

Job Description: PROJECT #010195-0005 - BAYVIEWPORT, PMA

Date Taken: 01/06/1994

Date Received: 01/07/1994

Sample ID: MW-3 Harley Pump Co.

| Analysis                 | Result | Units | Result<br>Zinc | Analyte    | Date<br>Analyzed | Method | Reporting<br>Limit | Matrix |
|--------------------------|--------|-------|----------------|------------|------------------|--------|--------------------|--------|
| VOLATILES - STEW (WATER) |        |       |                |            |                  |        |                    |        |
| Benzene                  | <10    | ug/L  | LJC            | 01/10/1994 | 9-8015/1A-GH1    | 2.0    | ug/L               | Water  |
| Ethylbenzene             | <10    | ug/L  | LJC            | 01/10/1994 | 9-8015/1A-GH1    | 2.0    | ug/L               | Water  |
| Toluene                  | 15     | ug/L  | LJC            | 01/10/1994 | 9-8015/1A-GH1    | 2.0    | ug/L               | Water  |
| Xylenes, Total           | <10    | ug/L  | LJC            | 01/10/1994 | 9-8015/1A-GH1    | 2.0    | ug/L               | Water  |
| Total Hydrocarbons       | 12     | ug/L  | LJC            | 01/10/1994 | 9-8015/1A-GH1    | 0.10   | ug/L               | Water  |


NOTE: Sample contains 2 large non-target peaks which resulted in elevated reporting limits.

All results are calculated on a wet weight basis.

Reporting limits are extremely matrix dependent and may not always be achievable.

Key to flags: B = Chromatogram does not match positive (GB-1 only) B = Blank hit for this compound

Units: ug/L = ppm ug/g = ug/kg = ppm ug/L = ppb

  
K. L. Bindert  
Operations Manager



NATIONAL  
ENVIRONMENTAL  
TESTING, INC.

# CHAIN OF CUSTODY RECORD

COMPANY DETCON 2, INC.  
ADDRESS 11111 TERRY PLACE, ITAHO, IL 60143  
PHONE 708/775-0300 FAX 708/775-1156  
PROJECT NAME/LOCATION ARREST ROOM CA / DAVENPORT, IA  
PROJECT NUMBER 210195-0003  
PROJECT MANAGER DEWANE STARK

REPORT TO DEWANE STARK / MLE

INVOICE TO DEWANE STARK / MLE

P.O. NO. \_\_\_\_\_

NET QUOTE NO. \_\_\_\_\_

COMPILED BY ALB DUT

OVERSEEN BY \_\_\_\_\_

FIELD TECH \_\_\_\_\_

SIGNATURE \_\_\_\_\_

SIGNATURE \_\_\_\_\_

ANALYST NO. \_\_\_\_\_

ANALYST NO. AN 3

DATE \_\_\_\_\_

DATE 1/1/90

LOW DETECT

CONDITION OF SAMPLE: BOTTLES INTACT? YES / NO  
FIELD FILTERED? YES / NO

COC BEALS PRESENT AND INTACT? YES / NO  
VOLATILES FREE OF HEADSPACE? YES / NO

TEMPERATURE UPON RECEIPT \_\_\_\_\_

SAMPLE REMAINDER DISPOSAL: RETURN SAMPLE REMAINDER TO CLIENT VIA \_\_\_\_\_  
REQUEST NET TO DISPOSE OF ALL SAMPLE REMAINDERS ALB DUT

RELEASED BY \_\_\_\_\_

DATE/TIME \_\_\_\_\_

RECEIVED BY \_\_\_\_\_

RECEIVED BY \_\_\_\_\_

DATE/TIME \_\_\_\_\_

METHOD OF SHIPMENT

AIRMAIR EXPRESS

REMARKS:

ARREST 680 473 337 7154

## II. Current Site Conditions

Has sufficient information been provided on the following?

A. General description of site geology

Y N 1 2 3

B. Description of all existing UST system(s) at site  
- active and out of service.

*Supplemental  
info should be  
placed in separate  
appendix* *of SCR*  
Y N 1 2 3

Are all USTs removed from the site?

C. Verify whether tank / line tightness tests were  
required by the IDNR file search required.

Required

Y N

If required: Using a copy of the latest tank/line  
tightness test, complete Table II-C

\* Appendix 1 - "Tank Line Tightness Testing Results"

Is a complete copy of tank/line tightness test,  
including all supporting data provided?

Y N

Is the method used approved by the USEPA and/or  
the IDNR for the conditions and tanks located at  
the site? Has third party certification been  
provided?

*NA*

Y N

Are the conclusions justified by data presented?

Y N 1 2 3

Are explanations of testing anomalies provided?

Y N 1 2 3

If corrective actions were initiated or repairs  
necessary, is a description of actions provided?

Y N 1 2 3

D. Topographic Site Map (Appendix 2)

Is a legible topographical map, with contour interval  
less than or equal to 10 feet, provided showing the  
site and surrounding area?

Y N

E. Scaled Site Plan (Appendix 3)

Is a scaled site plan provided showing the site and  
immediate surrounding area?

Y N 1 2 3

Does the diagram provided show the location of all  
existing and removed USTs, product lines, and  
dispensers, and pertinent site features, such  
as roads, buildings, wells, waterways,  
sinkholes, etc.?

Y N 1 2 3

*Non-tank study  
TTT neg-bts included  
but are not.  
Inst/Hadron  
Independent  
Shocks 4-  
not TTT  
results*

**F. Scaled Site Vicinity Map**

Are the names and addresses of owners whose property is or is likely to be affected by the movement of contamination provided? (Names provided must correspond to information on the "Scaled Site Vicinity Map")

Y N 1 2 3

**G. Appendix 4 - "II(F) - Scaled Site Vicinity Map"**

Is a completed scaled site map (1"= 200 to 500 ft) provided showing general area features and locations of adjacent properties which are or may be affected by contamination movement?

Y N 1 2 3

Does the map provided show all pertinent site features, including locations of buildings, roads, waterways, sinkholes, etc.?

Y N 1 2 3

**III. Soil Sampling Methods & Findings**

**A. Boring number and placement - Has a reasoned explanation been given to justify the number and placement of soil borings.**

Y N 1 2 3

Does the rationale for borehole placement allow for sufficient information to be collected to determine the vertical and horizontal extent of contamination and the transition zone(s) between areas that are and are not contaminated.

Y N 1 2 3

Is the rationale justified based on engineering, geologic, or hydrogeologic principles.

Y N 1 2 3

**B. Soil Boring Logs (Appendix 5)**

Note: Borings completed after March 5, 1992 must be logged on DNR Form 542-1392 or equivalent

Is a separate soil boring log provided for each borehole placed?

Y N 1 2 3

Are the boring logs completed with the information as required on DNR form 542-1392?

Y N 1 2 3

Is at least one (1) water level observation recorded with time, date and water elevation (ASL) for each boring log?

Y N 1 2 3

- C. Prevention of cross-contamination: Are the actions taken sufficient to prevent cross-contamination between boreholes during installation and sampling procedures?

Y N 1 2 3

- D. Vapor Equipment: Has a list been provided itemizing various vapor equipment used (if any), description of its use and an evaluation of the conclusions drawn from the vapor results and calibration procedures?

Y N 1 2 3

Calibration chart - Are daily calibration measurements noted for each vapor instrument used

Y N

*ALL DATA  
WAS RE-ENTERED  
ON 10/1/83  
TO CORRECT  
THE DATA WHICH  
WAS NOT APPROPRIATE  
TO INCLUDE THE  
DATA FROM  
THE OTHER  
BOREHOLE*

- E. Soil sample collection: Has a description been provided of soil sample collection methods and a reason for its use in obtaining representative samples.

Y N 1 2 3

At a minimum, were soil samples collected at 5 foot intervals or at points indicated by high vapor readings.

Y N 1 2 3

- F. Soil Contamination Plume Map(s) (Appendix 6)

Do the soil contamination plume map(s) depict the full extent of vadose zone soils which exceed the IDNR corrective action limit of 100 ppm total organic hydrocarbons?

Y N 1 2 3

Are the maps adequately labelled with each boring numbered and soil contamination concentration for each boring noted?

Y N 1 2 3

Based on the location of soil borings and the boring logs provided, are the limits of contamination identified justified by scientific principles?

Y N 1 2 3

Have the boring(s) used to determine hydraulic conductivity been identified?

Y N 1 2 3

#### IV. Groundwater Sampling Methods & Findings

- A. Boring number & placement: Is a reasoned explanation given to justify the number and placement of groundwater monitoring wells?

Y N 1 2 3

Does the rationale for monitoring well placement allow for sufficient information to be collected to determine the vertical and horizontal extent of contamination, site stratigraphy, and the transition zone between areas that are and are not contaminated.

Y N 1 2 3

Is the rationale justified based on engineering, geologic, or hydrogeologic principles.

X N 1 2 3

- B. Monitoring Well Construction Diagrams (Appendix 7)

Note: Monitoring wells installed after March 5, 1992 must be logged/described using IDNR Form 542-1392.

Is there a separate monitoring well construction diagram completed for each well installed at the site and in the general area?

Y N 1 2 3

Do the monitoring well construction diagrams provide sufficient information regarding the construction of each well (See Section IV-C)?

Y N 1 2 3

Are water level observations recorded that verify a stabilized level? Has the well been allowed to stabilize?

Y N 1 2 3

Is the static water level indicated with the symbol "Y"?

Y N 1 2 3

Is the static water level within the screened interval of the monitoring well?

Y N 1 2 3

- C. Description of Permanent Monitoring Well Construction :  
Are the following aspects of the well construction provided in a clear and concise description?

- (1) method of cleaning well components prior to installation
- (2) casing and screen material, diameter and length
- (3) screen slot size
- (4) how sections of casings and screens are connected
- (5) method used to install filter pack and seals,
- (6) actions taken to prevent cross-contamination of wells during construction and sampling
- (7) procedures to develop monitoring wells

Y N 1 2 3



- D. **Temporary Monitoring Wells:** Has a description or explanation been provided describing the type and use of temporary casing and screens in the boreholes used as temporary wells?

(N) Y N 1 2 3

Is an adequate explanation and justification provided on the procedures used to develop the well to ensure a representative groundwater sample?

(N) Y N 1 2 3

- E. **Groundwater Sampling Methods:** Has an adequate explanation and justification been provided for determining the adequacy of the groundwater sampling and well purging methods?

Y N 1 2 3

- F. **Groundwater Data for Contour Map Development:** Is a table provided which indicates, at minimum, the following information?

1. Well/Boring number
2. Date measured
3. Static Water Level (ASL) - nearest 0.01 ft
4. Water level correction for free product, if required
5. Ground Surface Elevation - nearest 0.1 ft

(Y) N 1 2 3

- If the water level was corrected due to presence of free product, was a statement provided describing the correction method?

Y N 1 2 3

Has a description of the benchmark used to survey for groundwater surface elevations been provided?

(Y) N 1 2 3

Is the benchmark used tied in to a USGS or other geodetic datum?

Y N 1 2 3

- G. **Groundwater Contour Map (Appendix 8)**

Does the Groundwater Contour Map provide information as to monitoring well locations, groundwater elevation points, groundwater contour intervals, and groundwater flow direction (noted with an arrow)?

groundwater flow direction still not well documented. See previous review

(Y) N 1 2 3

Are the wells used to determine hydraulic conductivity identified on the map?

Y N 1 2 3

If necessary, are separate groundwater contour maps provided to describe groundwater movement and flow direction in different aquifers?

(N) Y N 1 2 3

H. Has a description and explanation been provided on:

1. the methodology and device used to determine static groundwater levels - identify instrument used.
2. the accuracy of the method used to determine groundwater levels.
3. groundwater flows and/or anomalous water levels.
4. fluctuations in water levels, with special emphasis on those which may alter groundwater flow directions.

|   |   |   |   |   |
|---|---|---|---|---|
| Y | N | 1 | 2 | 3 |
| Y | N | 1 | 2 | 3 |
| Y | N | 1 | 2 | 3 |
| Y | N | 1 | 2 | 3 |

I. Groundwater Contamination Plume Maps (Appendix 9)

Do the groundwater contamination plume map(s) depict the full extent of free phase product and dissolved phase contamination exceeding the department's groundwater corrective action limits and are the iso-concentrations of groundwater contaminants noted within the plume?

|   |   |   |   |   |
|---|---|---|---|---|
| Y | N | 1 | 2 | 3 |
|---|---|---|---|---|

If necessary, is a separate groundwater contaminant plume map provided for each contaminant which exceeds the IDNR's corrective action limits?

|   |   |   |   |   |
|---|---|---|---|---|
| Y | N | 1 | 2 | 3 |
|---|---|---|---|---|

Is each data point adequately labelled as to MW # and contaminant concentration?

|   |   |   |   |   |
|---|---|---|---|---|
| Y | N | 1 | 2 | 3 |
|---|---|---|---|---|

If applicable, is a map provided which depicts the full extent of free product and depth of product?

|   |   |   |   |   |
|---|---|---|---|---|
| Y | N | 1 | 2 | 3 |
|---|---|---|---|---|

Based on the number and location of data points/monitoring wells provided, are the diagramed limits of contamination justified?

|   |   |   |   |   |
|---|---|---|---|---|
| Y | N | 1 | 2 | 3 |
|---|---|---|---|---|

Has the "transition zone" between adequately defined?

|   |   |   |   |   |
|---|---|---|---|---|
| Y | N | 1 | 2 | 3 |
|---|---|---|---|---|

V. Sampling Quality Control

Has a statement been provided that indicates that the QC/QA procedures used are at least as stringent as those of the IDNR's IUST QC/QA plan.

|   |   |
|---|---|
| Y | N |
|---|---|

#### VI. Hydrogeologic Cross Sections (Appendix 10)

Are the Hydrogeologic Cross-Sections or three-dimensional diagrams stratigraphically correct as interpreted from the soil boring logs?

☒ Y    ☐ N    1    2    3

Do the cross-section diagrams provide detail of the following:

Identification of types and characteristics of the geologic materials present?

☒ Y    ☐ N    1    2    3

Identification of contact zones between different geological materials, noting areas of high permeability and/or fracture?

☒ Y    ☐ N    1    2    3

Location of boreholes, noting depth of termination and zone of saturation?

☒ Y    ☐ N    1    2    3

#### VII. Hydraulic Conductivity

A. Has the hydraulic conductivity been determined?

☒ Y    ☐ N    1    2    3

Has a statement been made identifying which boring(s) and/or wells were used to determine the hydraulic conductivity?

☒ Y    ☐ N    1    2    3

Have the data and calculations used to determine hydraulic conductivity been provided?

☒ Y    ☐ N    1    2    3

B. Has the method used to determine hydraulic conductivity been identified?

☒ Y    ☐ N    1    2    3

C. If an equivalent method (other than the Bouwer-Rice method in saturated soils or the Guelph permeameter in unsaturated soils) was used, was the accuracy and appropriateness evaluated?

☒ Y    ☐ N    1    2    3

D. Has an explanation been provided on why the location/number of data points used for determining hydraulic conductivity is representative of the conductivity at the site?

☒ Y    ☐ N    1    2    3

Values are to be reported  
in m/day

VIII. Receptor Survey (Appendix 11)

- A. Has a map been provided, with an appropriate scale to adequately show all surface water bodies within 1000 feet of the petroleum contaminated area? Y N
- Has the potential impact to the surface water been adequately investigated? Y N 1 2 3
- If water samples and/or soil samples have been collected, has a statement been provided on sample collection and analysis methods? Y N 1 2 3
- Has a narrative summary been provided to evaluate the potential for hydrogeological connections between the contamination and the surface water? Y N 1 2 3
- B. Has a map been provided, with an appropriate scale to adequately show all utility conduits within 200 feet of the petroleum contaminated area? Y N
- Has the potential impact to the conduits been adequately investigated? Y N 1 2 3
- Has a detailed statement of investigation procedures been provided, which should include identification of all soil and or vapor sample locations? Y N 1 2 3
- Has a narrative summary been provided on the investigations conducted to determine if the vapors are present in confined spaces and/or in occupied structures? Y N 1 2 3
- Has a narrative summary been provided to evaluate the potential for hydrogeological connections between the contamination and the conduits? Y N 1 2 3
- Has a tabulation of all conduits and confined spaces been provided, which identify the type of conduit or confined space, conduit backfill material, slope of conduit and trench, and relationship to groundwater level? Y N 1 2 3
- C. Are the locations of all active, abandoned, and plugged groundwater wells within 1000' of the petroleum contaminated area provided? Has an on-site survey been conducted within a 300' radius of the site? Y N 1 2 3
- Are copies of available well logs and the names and addresses of well owners provided for identified wells within 1000 feet of the contaminated area? Y N 1 2 3

- D. Has a narrative summary been provided to evaluate any potential groundwater barriers (i.e. foundations, structures, parking lots, roads, etc.) which may have an impact on the movement of contamination?

Y N 1 2 3

Has a explanation been provided on the significance the identified barriers as related to the hydrogeologic conditions present at the site?

Y N 1 2 3

#### IX. Health & Safety Plan

Has a certification been presented which verifies that the On-Site Health & Safety plan conforms to applicable OSHA requirements?

Y N

#### X. Tabulation of Analytical Data

- A. Soil Analytical Data Information: has the table on page 15 been completed using the soil sample analytical data obtained during this and all previous investigations for each soil boring or MW?

Y N 1 2 3

- B. Groundwater Analytical Data Information: has the table on page 15 been completed using the groundwater analytical data obtained during this and all previous investigations. The list should be chronological and list each well sequentially

Y N 1 2 3

- C. Do the tables provided and the laboratory data sheets ( - Appendix 12) agree?

Y N 1 2 3

Have copies of ALL analytical data sheets been provided?

Y N 1 2 3

#### XI. Free Product

- A. Has free product been identified at the site?
- B. If yes, is the date indicated when the "Free Product Removal Report" was submitted to the department?
- C. Is a narrative provided which discusses the status and effectiveness of the free product removal system in relation to the hydrogeologic conditions at the site?

Y (N)

(N) Y N

(N) Y N 1 2 3

### III. Contamination Source

- A. Has the source of contamination at the site been identified?

Y N 1 2 3

#### Appendix 13 - Off-Site Contamination Source Support Data

Has sufficient evidence, including analytical data and maps showing potential off-site sources and groundwater flow direction, been provided to justify the conclusion that the contamination at this site is due to an off-site source?

Y N 1 2 3

### III. SITE RISK CLASSIFICATION

Questions for evaluating if an adequate investigation has been completed to properly determine site risk classification. Justification MUST be provided, for each response, in Appendix 14.

#### A. JUSTIFICATION FOR HIGH RISK

##### 1. Senses in occupied structures:

- a. File review: Are there documented reports of fumes or vapors in occupied structures in the immediate area?

Y N

- b. If yes, has an adequate investigation taken place to determine if the TLV-TWA for benzene in occupied structures exceeds or is likely to exceed 10 ppm in an 8 hour period?

Y N 1 2 3

- c. If yes, is the method of analysis and all supporting laboratory data provided?

Y N 1 2 3

- d. Has an appropriate justification been provided to determine risk classification?

Y N 1 2 3

##### 2. Combustible Gases in confined spaces:

- a. File review: Are there documented reports of fumes or vapors in structures, basements, sewers, utility conduits or any other confined space in the immediate area?

Y N

- b. If yes, has an adequate investigation taken place to determine if the concentration of combustible gases exceeds or is likely to exceed 10% of the LEL?

Y N 1 2 3

- c. If yes, is the method and instrument used for analysis identified? ☒ Y ☐ N 1 2 3
- d. Has an appropriate investigation been performed to evaluate the potential of combustible gases to collect in confined spaces in the petroleum contaminated area? ☒ Y ☐ N 1 2 3
3. Surface water criteria:
- a. File review: Are there documented reports of surface water quality violations suspected to be from the petroleum contamination at this site? ☐ Y ☒ N
- b. If yes, has an adequate investigation taken place to determine if the contamination at this site exceeds or is likely to exceed the water quality standards contained in Subrule 567--61.3(455B) of the IAC? ☒ Y ☐ N 1 2 3
- c. Has an appropriate investigation been performed to evaluate the potential of contamination migration to exceed the water quality criteria standards outlined in Subrule 567--61.3(455B) of the IAC? ☒ Y ☐ N 1 2 3
4. PVC Drinking Water Line:
- a. File review: Have there been any reports indicating that soil contamination may be in contact with a utility trench containing a PVC drinking water line in the area of petroleum contamination? ☐ Y ☒ N
- b. Has an adequate investigation been conducted to determine the extent of soil contamination which exceeds the corrective action limit in the vicinity of the PVC line? ☒ Y ☐ N 1 2 3
- c. Is the rationale for the response indicated (High risk or No) supported by maps and analytical data? ☐ Y ☐ N 1 2 3
5. Utility trenches:
- a. File review: Have there been any reports indicating that contamination which exceeds the corrective action limit, as contained in Subrule 567--135.8(8) of the IAC, is in contact with a utility trench? ☐ Y ☒ N
- b. Has an adequate investigation been conducted to determine the extent of soil and/or groundwater contamination which exceeds the corrective action limit in the vicinity of the utility conduits? ☐ Y ☒ N 1 2 3
- c. Is the rationale for the response indicated (High risk or No) supported by maps and analytical data? ☐ Y ☒ N 1 2 3

6. Damage to utility conduits or structures:

- a. File review: Have there been any reports indicating that contamination is present at concentrations which is causing or is likely to cause physical damage to a utility conduit or structure? Y N
- b. If yes, has an adequate investigation taken place to determine if the contamination is causing or is likely to cause damage to the utility structure? Y N 1 2 3
- c. Is the rationale for the response indicated (High risk or No) supported by maps and analytical data? Y N 1 2 3

7. Soil contamination (above CAL) within 1000 ft of an active well:

- a. Has soil contamination been identified at the site? Y N
- b. Are there any active groundwater wells, regardless of use, located within 1000 feet of the area of contamination? Y N 1 2 3
- c. Is the rationale for the response indicated supported by maps and analytical data? Y N 1 2 3
- d. Does the rationale provided outline sufficient evidence to justify the response indicated? Y N 1 2 3
- e. If classified as High Risk, has evidence been provided to justify that the site be reclassified as Low Risk? Y N 1 2 3

8. Soil contamination (above CAL) in contact with protected groundwater source or groundwater source used as a public or private water source:

- a. Has soil contamination been identified at the site? Y N 1 2 3
- b. Has the seasonal high water table been identified? Y N 1 2 3
- c. Is the groundwater aquifer a protected groundwater source or a groundwater source used as a public/private water source? Y N 1 2 3
- d. Is there sufficient evidence to justify the response indicated (i.e. High Risk or No)? Y N 1 2 3
- e. Is the rationale for the response indicated supported by maps and analytical data? Y N 1 2 3

9. Karst topography or area of fractured limestone:

- a. Based on site or areal geology, is this contamination zone located within an area of fractured carbonate bedrock or in an area of karst topography? Y N 1 2 3



- b. If yes, has this site been classified as high risk? N/A Y N 1 2 2
- c. Has documentation been provided to indicate that this site may be reclassified as Low Risk based on the factors outlined on page 17 of 20, Section A., no. 9. Y N 1 2 3
10. Private or public water supply:
- a. Are there any public or private water supplies located within the vicinity of the petroleum contaminated area? Y N 1 2 3
- b. If yes, has an adequate investigation taken place to determine if the contamination is affecting or may affect the water supply areas? Y N 1 2 3
- c. Has a public or private water supply been or likely to be impacted by contamination to the extent that an MCL is exceeded, or in the absence of an MCL, and Action Limit is exceeded? Y N 1 2 3
11. Protected groundwater source:
- a. Has the groundwater at the site been impacted by contamination to the degree that an MCL or action level has been exceeded? Y N 1 2 3
- b. Has the groundwater been defined as a protected groundwater source? Y N 1 2 3
- c. If no to (b), has sufficient evidence, including analytical data (i.e., TDS), been provided to support conclusion? Y N 1 2 3
12. Man-made structures:
- a. Are there any natural or man-made conduits located within 100 ft of the contaminated groundwater plume which could allow the vertical or horizontal migration of petroleum contamination to a protected groundwater source that is used as a water source? Y N 1 2 3
- b. If yes, has an adequate investigation taken place to determine if the contamination is migrating or is likely to migrate to the toward the protected groundwater source? Y N 1 2 3
13. Public or private water source:
- a. Has the groundwater been impacted by petroleum contamination? Y N
- b. Is the contaminated groundwater plume within 1000 ft of an active public or private water source? Y N 1 2 3
- c. If yes, has evidence been provided to justify that the site be reclassified as Low Risk? Y N 1 2 3

14. Material separating groundwater source from contamination:

- a. Is there a minimum of three meters (9.75 ft) of uncontaminated soil, free of discontinuities, with a hydraulic conductivity of less than or equal to  $10^{-6}$  meters/day, between the contamination zone and a protected groundwater source or a groundwater serving as a public or private water source? Y N 1 2 3
- b. If yes to (a), has sufficient evidence been provided to support the statement? Y N 1 2 3
- c. If classified as High Risk, has evidence been provided to justify that the site be reclassified as Low Risk? Y N 1 2 3

B. LOW RISK SITE CONDITIONS

1. Does the soil TOH concentration exceed 100 mg/Kg or does the groundwater contaminant concentration exceed the MCL or an Action Limit? Y N
2. If yes to 1, do High Risk conditions exist at the site? Y N 1 2 3
3. Do High Risk conditions #7, 9, 13, and/or 14 exist at the site? Y N
4. If yes to 3, has sufficient evidence been provided to support conclusions to reclassify as low risk? Y N 1 2 3

C. No Action Required Site Conditions

Does the SCR show that soil TOH concentrations are equal to or less than an MCL and that the groundwater contamination is equal to or less than an MCL or in the absence of an MCL, are equal to or less than an action level and high risk or low risk conditions do not exist and are not likely to occur?

Y N 1 2 3

Do HIGH or LOW Risk conditions exist at the site?

Y N 1 2 3

XIV. Corrective Action Responses

A. High Risk Site Corrective Action Recommendations

1. Have the following been identified for the petroleum contaminated area:
- a. Vadose zone soil contamination? Y N 1 2 3
- b. If yes to 1a., has the approx. volume of contaminated soil been determined? Y N 1 2 3

- c. Dissolved phase petroleum product in the groundwater? ☒ Y ☐ N 1 2 3  
*Method questionable - values not realistic*
- d. If yes to 1c., has the approx. volume of contaminated groundwater been determined? ☒ Y ☐ N 1 2 3
- e. Free phase petroleum product present? ☒ Y ☐ N 1 2 3
- f. If yes to 1e., has the approx. volume of free product been determined? ☒ Y ☐ N 1 2 3
2. Have at least two (2) applicable treatment technologies been proposed? ☒ Y ☐ N 1 2 3

#### Appendix 15 - "XIV (A3) - Treatment Technology Evaluation"

For each applicable treatment technology (minimum 2), has each of the following been identified and/or evaluated?

- 1) Identification of treatment technology
- 2) treatment method effectiveness
- 3) reliability
- 4) site characteristics
- 5) environmental, public health, and safety benefits and/or disadvantages
- 6) costs

*Method questionable - values not realistic*

☒ Y ☐ N 1 2 3

#### 4. Appendix 16 - "XIV (A4) - Best Available Technology (BAT)"

Has the BAT been identified?

☒ Y ☐ N 1 2 3

Has a in-depth evaluation, detailed justification, and explanation for selection of the treatment been provided?

☒ Y ☐ N 1 2 3

#### B. Low Risk Site Corrective Action Recommendations

1. Have the following been identified for the petroleum contaminated area:

- a. Vadose zone soil contamination? ☒ Y ☐ N 1 2 3
- b. If yes to 1a., has the approx. volume of contaminated soil been determined? ☒ Y ☐ N 1 2 3
- c. Dissolved phase petroleum product in the groundwater? ☒ Y ☐ N 1 2 3  
*Method questionable - values not realistic*
- d. If yes to 1c., has the approx. volume of contaminated groundwater been determined? ☒ Y ☐ N 1 2 3  
*Method questionable - values not realistic*
- e. Free phase petroleum product present? ☒ Y ☐ N 1 2 3
- f. If yes to 1e., has the approx. volume of free product been determined? ☒ Y ☐ N 1 2 3

Appendix 17 - "XIV (B2) - Best Management Practice"

Has a detailed "Best Management Practice" plan been provided which discusses the items listed on Page 20 of 20 of the SCR format, Section B(2)?

Y N 1 2 3

Appendix 18 - "XIV (B3) - Monitoring Plan"

Has a monitoring plan been provided which outlines the number and locations of monitoring sites, and is the plan consistent with expected contamination migration patterns?

Y N 1 2 3

If soil contamination only, does the Monitoring Plan and Best Management Practice allow for the determination of the following:

- 1) movement of soil contamination?
- 2) a measurable decrease or increase of contaminant levels in the soil?
- 3) an impact to the groundwater?

Y N 1 2 3

Does the monitoring plan meet the frequency recommended? Y N

Additional Comments:

All appendices are to be placed @ end of SCR in the appropriate order.

If answers/information cannot be placed within the space provided in the SCR paper, the expanded answer/info. should be placed in an appendix & numbered - i.e. appendix 19, 20, 21, etc.

GW contamination not adequately clarified, especially to E & S. If site were low risk - existing wells are not adequate to monitor movement of plume or changes in concentration.

# SCR SUMMARY SHEET

(Sheet 1 of 2)

COST # 1910056

TANK REGISTRATION # 1910056

SITE NAME INDUSTRIAL PARK NO.

SITE ADDRESS 516 E. 59th ST, DAVENPORT

REVIEW DATE 1/10/06

REVIEWER JAM

## I. PLUME DEFINITION

A. SOIL (Circle) Defined ☐ Marginal ☐ Unacceptable ☒ N/A

Is additional work required? Yes ☒ No ☐

Reason VERTICAL EXTENT

B. GROUNDWATER Defined ☐ Marginal ☐ Unacceptable ☒ N/A

Is additional work required? Yes ☒ No ☐

Reason PLUME AS INDICATED BY

## II. RECEPTOR SURVEY

A. SURFACE WATER ☐ Adequate ☐ Marginal ☐ Unacceptable ☒ N/A

B. CONDUIT SURVEY ☐ Adequate ☐ Marginal ☒ Unacceptable ☐ N/A

C. WELL SURVEY ☐ Adequate ☒ Marginal ☐ Unacceptable ☐ N/A

D. BARRIER SURVEY ☐ Adequate ☒ Marginal ☐ Unacceptable ☐ N/A

Is additional work required? Yes ☒ No ☐

Reason RECEP. SURVEY NOT DONE WITH RECEP. TO SCALE

## III. RISK JUSTIFICATION (Circle) Adequate ☐ Marginal ☐ Unacceptable ☒ N/A

Reason PROXIMITY TO WATER WELLS

## IV. RISK CLASSIFICATION (Circle) HIGH ☐ LOW ☒ NO ACTION ☐

AGREE ☐

DISAGREE ☒

Reason

## V. SCR QUALITY (Circle)

Good

Marginal

Poor

Can it be accepted?

Yes

NoReason: 1. LKLY FULFILLMENT OF THE MONITORING PLAN

## VI.

BAT (circle)

Adequate

Marginal

Inadequate

N/AReason: MAY BE REFINED IF ANYTHING IS TO BE  
RECOMMENDED

## VII.

MONITORING PLAN (Circle)

Adequate

Marginal

Inadequate

N/AReason: MUD-1 IS NOT REPRESENTATIVE WITH 23 2 FT BELOW WATER LEVEL.

(Additional comments, if necessary)

CHECKLIST  
FOR THE  
SITE CLEANUP REPORT (SCR)

The following guidance document is used to evaluate Site Cleanup Reports submitted to the department for review. Additional comments are written, if necessary, in the margins referencing the area of concern.

The following questions, derived from the SCR document, are to be answered based on the information presented in the SCR. Responses may fall into the following categories:

- Y - Yes. Information provided meets the qualifications as indicated or presents the correct information.
- N - No
- 1 - Information is inadequate
- 2 - Information is inaccurate
- 3 - Information is missing
- N/A - not applicable

LIST NO. \_\_\_\_\_

FACILITY NAME/CITY \_\_\_\_\_

Date SCR received: \_\_\_\_\_

Date review initiated: \_\_\_\_\_

completed: \_\_\_\_\_

Reviewer Name: \_\_\_\_\_

Comment Letter date: \_\_\_\_\_

HAS THE SITE CLEANUP REPORT (SCR) BEEN COMPLETED USING THE FORMAT PROVIDED OR A FORMAT DESIGNATED BY THE DEPARTMENT?

YES

NO

REV. 7/1993

Report not assembled properly -  
Appendices are to be placed in order  
at end of report.

SITE CLOSURE REPORT CHECKLIST

Title Page

Are the following entries correctly completed:

|                                      |   |   |   |   |   |
|--------------------------------------|---|---|---|---|---|
| 1. LUST Number                       | Y | N | 1 | 2 | 3 |
| 2. UST Registration No.              | Y | N | 1 | 2 | 3 |
| 3. Site Name                         | Y | N | 1 | 2 | 3 |
| 4. Site Address (complete)           | Y | N | 1 | 2 | 3 |
| 5. Responsible Party - Name          | Y | N | 1 | 2 | 3 |
| 6. Resp. Party - Address (complete)  | Y | N | 1 | 2 | 3 |
| 7. Submittal Date                    | Y | N | 1 | 2 | 3 |
| 8. Site Risk Classification          | Y | N | 1 | 2 | 3 |
| 9. Name / Sign. of Groundwater Prof. | Y | N | 1 | 2 | 3 |
| 10. Name / Sign. of Resp. Party      | Y | N | 1 | 2 | 3 |

Appendices Check-off Sheet

Appendices Check-Off Sheet be completed?  
Verify that all Appendices checked are in report.

Y ~~X~~ 1 ~~X~~ 3

I. Site History

Have the following been properly identified? (Verify thru UST database/written file)

|                                                                                                                                                                                                                    |              |   |   |   |   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---|---|---|---|
| A. Date of petroleum release discovery                                                                                                                                                                             | Y            | N | 1 | 2 | 3 |
| B. Date petroleum release reported to IDNR                                                                                                                                                                         | Y            | N | 1 | 2 | 3 |
| C. Site Owner Chronology - all information must be provided with no chronological gaps (the listing should include all periods of time when petro products were used or sold at the site)<br><i>format present</i> | <del>X</del> | N | 1 | 2 | 3 |
| D. Description of circumstances of the discovery of release<br><i>attachments can be placed in appendices @ end of SEC</i>                                                                                         | Y            | N | 1 | 2 | 3 |
| E. Description of initial actions taken to abate petroleum release                                                                                                                                                 | Y            | N | 1 | 2 | 3 |



# M&E Metcalf & Eddy

Environmental Engineering & Technology

November 4, 1993

Mr. Vern Shrunk, LUST Coordinator  
Iowa Department of Natural Resources  
Wallace State Office Building  
Des Moines, Iowa 50319

RE: Site Cleanup Report (SCR)  
The Marley Pump Company  
500 E. 59th Street, Davenport, Iowa  
Tank Registration No. 7910056  
LUST No. 8LTS84

Dear Mr. Shrunk:

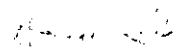
Metcalf & Eddy, Inc. (M&E), on behalf of the Marley Pump Company, has revised the Site Completion Report (SCR) in accordance with the Iowa Department of Natural Resources' (IDNR's) procedural administrative and technical comments dated June 1, 1993. Included in this submittal is one copy of the revised and completed SCR submitted via express mail. An additional copy of this report will be submitted to GAB Business Services, Inc. (GAB) via U.S. Express Mail.

Briefly, three soil borings and one monitoring well were completed at the above referenced facility. The data from this investigation allowed for this site to be classified as a low risk. Further details are provided throughout the SCR.

If you have any questions, please call Denise Story, M&E, at (708)775-0300 or Dan Van Zuden, Marley Pump Company, at (319)388-1410.

Sincerely,

METCALF & EDDY, INC.

  
Denise Story  
Project Manager

cc: Mr. Tim Verhagen, United Dominion (w/o report)  
Mr. Dan Van Zuden, Marley Pump Company (w/o report)  
Mr. Chip Nelson, Marley Pump Company (w/o report)  
GAB Business Services, Inc. (w/ report)

**IOWA**  
**DEPARTMENT OF NATURAL**  
**RESOURCES**

**LEAKING UNDERGROUND STORAGE TANK**  
**SITE CLEANUP REPORT (SCR)**

Iowa Department of Natural Resources  
Underground Storage Tank Section  
Wallace State Office Building  
800 East Grand Avenue  
Des Moines, IA 50319-0034

515/281-8693

March 1992

# IOWA DEPARTMENT OF NATURAL RESOURCES

\*\*\* IMPORTANT: READ ALL INSTRUCTIONS BEFORE COMPLETING \*\*\*

## Leaking Underground Storage Tank Site Cleanup Report (SCR)

### SITE IDENTIFICATION

LUST No: 8LTS UST Registration Number: 7918056

Site Name: THE MARLEY PUMP COMPANY

Site Address: 500 EAST 59TH STREET

City: DAVENPORT

### RESPONSIBLE PARTY IDENTIFICATION

Name: THE MARLEY PUMP COMPANY

Street: 500 EAST 59TH STREET

City: DAVENPORT

State: IA

Zip Code: 52808

Submission Date: 11/4/93

SITE RISK CLASSIFICATION (check one): ☐ HIGH RISK ☒ LOW RISK ☐ NO RISK

### STATEMENT OF CERTIFICATION

The below named certify that this document, appendices and attachments satisfy the Site Cleanup Report requirements of Chapter 567-135(4536) of the Iowa Administrative Code and all other applicable state, federal and local requirements.

Print the Name of Registered Professional

Timothy J. VERHAGEN  
Print the Name of Responsible Party

Signature - Registered Professional

[Signature]  
Signature - Responsible Party

### Official DNR Use Only

Date Received: 11/4/93  
Reviewed By: [Signature]  
Date Reviewed: 11/4/93

Comment Date:             
Comment Date:             
Approved Date:

## APPENDICES CHECK-OFF SHEET

Check the box to indicate the appendix is attached. Attach the appendices to the end of the SCR in the order listed.

- ☒ Appendix 1 "II(C) - Tank & Line Tightness Testing Results"  
Copies of all results, supporting field data, and the third party evaluation of the leak detection system. Explain the cause of testing anomalies and discuss any corrective action or repairs made to the system. Label as II(C) - Tank & Line Tightness Testing Results.
- ☒ Appendix 2 "II(D) - Topographical Site Map"  
Topographic map of the site and surrounding area. Label as II(D) - Topographical Site Map.
- ☒ Appendix 3 "II(E) - Scaled Site Plan"  
Map showing the site and immediate surrounding area. Label as II(E) - Scaled Site Plan.
- ☒ Appendix 4 "II(F) - Scaled Site Vicinity Map"  
Map showing the site in relation to general area features and the locations of properties adjacent to the site affected by the petroleum contamination or with potential to be affected as a result of contamination movement. Label as II(F) - Scaled Site Vicinity Map.
- ☐ Appendix 5 "III(B) - DNR Form 542-1392, Soil Boring Logs"  
Completed DNR form 542-1392 for each soil boring at the site. Label as III(B) - Soil Boring Log.
- ☒ Appendix 6 "III(H) - Soil Contamination Plume Map"  
Soil contamination plume map depicting the full extent of vadose zone soils exceeding the soil contamination corrective action levels. Label as III(H) - Soil Contamination Plume Map.
- ☐ Appendix 7 "IV(B) - DNR Form 542-1392, Monitoring Well Construction Diagram"  
Completed DNR form 542-1392 for each monitoring well at the site. Label as IV(B) - Monitoring Well Construction Diagram.
- ☐ Appendix 8 "IV(G) - Groundwater Contour Map"  
Groundwater contour map based on work zone at the site. Label as IV(G) - Groundwater Contour Map.
- ☐ Appendix 9 "IV(I) - Groundwater Contamination Plume Maps"  
Groundwater contamination plume maps depicting the full extent of free phase product and dissolved phase contamination exceeding the groundwater corrective action levels under 135.7(9) and the levels of groundwater contamination within the plume. Label as IV(I) - Groundwater Contamination Plume Map.
- ☐ Appendix 10 "VI - Hydrogeological Cross-Section Diagram"  
Stratigraphically correlated hydrogeologic cross-section or three-dimensional diagram which adequately defines the spatial relationships of subsurface materials at the site. Label as VI - Hydrogeological Cross-Section Diagram.

☐ Appendix 11 "VIII - Receptor Survey Map"

Site area map with the results of the following receptor surveys illustrated:

● Surface Water Body Survey. Location of surface water bodies (i.e. lakes, ponds, rivers, streams, etc.) within 1,000 feet of the petroleum contamination and evaluation of the potential for there to be a hydrogeological connection between the contamination and surface water.

2) Conduit Survey. Location of utility and natural conduits and confined spaces within 200 feet of the petroleum contamination and the results of investigations to determine the potential for the conduits to act as a pathway for vapors and product.

3) Groundwater Well Survey. Location of active, abandoned and plugged groundwater wells within 1,000 feet of the petroleum release.

4) Groundwater Barriers Survey. Locations of barriers and an explanation of their significance to contamination movement.

Label as *VIII - Receptor Survey*. Title survey narratives with the headings above.

☐ Appendix 12 "X - Laboratory Data Sheets"

Copies of laboratory data sheets. Label as *X - Laboratory Data Sheets*.

☐ Appendix 13 "XII(B) - Off-Site Contamination Source Support Data"

Data to support allegations of off-site contamination sources impacting the site. Label as *XII(B) - Off-site Contamination Source Support Data*.

☐ Appendix 14 "XIII - Site Risk Classification Justification"

Justification of risk classification. Label as *XIII - Site Risk Classification Justification*.

☐ Appendix 15 "XIV(A3) - Treatment Technology Evaluation" (High Risk Sites Only)

● Evaluation of treatment technologies. Label as *XIV(A3) - Treatment Technology Evaluation*.

☐ Appendix 16 "XIV(A4) - Best Available Technology (BAT)" (High Risk Sites Only)

Identification of the best available treatment technology. Label as *XIV(A4) - Best Available Technology (BAT)*.

☐ Appendix 17 "XIV(B2) - Best Management Practices" (Low Risk Sites Only)

Detailed best management practices plan. Label as *XIV(B2) - Best Management Practice*.

☐ Appendix 18 "XIV(B3) - Monitoring Plan" (Low Risk Sites Only)

Monitoring plan that will ensure any significant increase in contamination concentration or movement is detected. Label as *XIV(B3) - Monitoring Plan*.

**\*\*\* IMPORTANT: READ ALL INSTRUCTIONS BEFORE COMPLETING \*\*\***

**I. Site History** (CONFINE YOUR ANSWER TO THE SPACE PROVIDED UNLESS OTHERWISE NOTED)

A. Date the petroleum release was discovered: (mm/dd/yy) 03/18/92

B. Date the petroleum release was reported to DNR: (mm/dd/yy) 04/03/92

C. Site Owner Chronology This Page May Be Photocopied for Additional Site History  
Provide a chronological summary of past and present site and tank owners and operational history. Begin with the present and work backwards. Include all periods of time petroleum products have been stored, used or sold on site. List the current mailing addresses of all previous owners and tank operators. List written contracts or agreements between land owners, real estate owners and tank operators. In the "SITE ACTIVITY" row, list number, capacity, and contents of past and present tanks, previous releases and tank closures.

| DATE                               | Present                                                           |  |  |
|------------------------------------|-------------------------------------------------------------------|--|--|
| LAND OWNER NAME AND ADDRESS        | The Marley Pump Co<br>500 E. 59th Street<br>Davenport, Iowa 52808 |  |  |
| REAL ESTATE OWNER NAME AND ADDRESS | Same as above                                                     |  |  |
| OPERATOR NAME AND ADDRESS          | Same as above                                                     |  |  |
| CONTRACT AGREEMENTS                | See attached title documents, warranty deed                       |  |  |
| SITE ACTIVITIES                    | See attachment                                                    |  |  |

Is this page reproduced with additional history ?

Yes ☐

No ☒

ATTACHMENT

I. Site History, Contract Agreements, The Marley Pump Company

STATE OF ~~MISSISSIPPI~~ COUNTY, MS

On this 12 day of October, A. D. 1969, before me, the undersigned, a Notary Public in and for the State of Washington, John N. Westerveld, Jr. appeared John N. Westerveld, Jr. a Man of the County of King and State aforesaid, personally known to me, and he acknowledged to me that he executed the foregoing instrument for the purposes and consideration therein expressed.

to the known to be the editorial persons named in and who consumed the foregoing statement, and acknowledged that they executed the same as their voluntary act and deed.

[illegible]

441 Stevenson Express March 2, 1971

Imogene S. Wilson

the Canadian Express Month 1, 1914.

STATE OF MISSISSIPPI COUNTY, CLAY

On this \_\_\_\_\_ day of \_\_\_\_\_, A. D. 1942, before me, the undersigned, a Notary Public in and for said County, in said State, personally appeared \_\_\_\_\_ STEPHEN T. WESTERFIELD and \_\_\_\_\_ JESSIE WESTERFIELD, his wife

to me known to be the identical persons named in and who executed the foregoing instrument, and acknowledged that they executed the same upon their voluntary act and deed.

U.S. GOVERNMENT PRINTING OFFICE: 1977

Wiles C. Ballou

## History Public in

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Warranty**

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James M. Jones

## Company

**Unemployment has prevented the**

**Figure 1** *Mean (SD) serum concentrations of total cholesterol, HDL cholesterol, and triglycerides in the 2 groups*

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**Решение**

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**8050**

2

**OFFICIALS:**

### Building Your Support System

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 $PuTna... Alky.$





PROJECT NO. 14  
 DRAWING NO. 16-Final

DATE: March 1, 1971  
 BY: May 11, 1971

RED JACKET MFG. CO.

PROJECT: 4250  
 PROJECT: New Office and Plant Facility  
 ADDRESS: 500 E. 59th St., Davenport, Iowa  
 OWNER: Red Jacket Mfg. Co.  
 CONTRACTOR: Henry R. Schaefer Co.  
 CONTRACT TYPE: General  
 DATE: November 5, 1969

RECEIVED

MAY 12 1971

OWNER

This is to certify that the Contractor has been approved for payment by the Commission on the basis of the work done on the project.

The following is a summary of the work done on the project:

|                            |               |
|----------------------------|---------------|
| ORIGINAL CONTRACT SUM      | \$ [REDACTED] |
| CHANGE ORDERS              |               |
| TOTAL CHANGES              | \$ [REDACTED] |
| TOTAL CONTRACT TO DATE     | \$ [REDACTED] |
| ALANCE TO FINISH           | None          |
| TOTAL COMPLETED TO DATE    | \$ [REDACTED] |
| MATERIAL STORED            | None          |
| TOTAL COMPLETED AND STORED | \$ [REDACTED] |
| LESS RETAINAGE             | None          |
| TOTAL PAID TO DATE         | \$ [REDACTED] |
| RETAINAGE                  | \$ [REDACTED] |
| LESS PREVIOUS PAYMENTS     | \$ [REDACTED] |
| THIS CERTIFICATE           | \$ [REDACTED] |

DATE: March 1, 1971  
 BY: May 11, 1971  
 WORK AMT. \$ [REDACTED]  
 AMT. \$ [REDACTED]  
 AMT. \$ [REDACTED]

This certificate is not valid unless it is signed by the Owner or Contractor and is issued, stored, and paid for in accordance with the terms of the Certificate for Payment and the Commission on the basis of the work done on the project.

State of Iowa  
 County of Scott

Subscribed and Sworn to before me this

Eleventh day of May 1971

Nat'l. Pub. *Dallas C. Martin*

My Commission expires: July 4, 1972

Contractor: Henry R. Schaefer Co.

By: *C. H. Schaefer* May 11, 1971

NOTARY PUBLIC  
 DALLAS, TEXAS  
 MAY 11, 1971

1. Site History, Page 5 of 20

Site Activities: One 500-gallon manufactured steel underground storage tank (UST) was installed on March 19, 1974 by the Marley Pump Company. This UST was used to store gasoline for the use and sole purpose of testing gasoline pumps. Fill lines, product lines, and dispensers did not exist as part of the UST system. The UST was active from its installation, March 19, 1974, to June 1983. During the tank's active life, the plumbing (not specified) leaked and was repaired on March 13, 1979. During the time period August 1987 through November 1987, an unknown amount of fluid (gasoline and/or water) was removed from the UST and filled with sand (e.g. the UST was abandoned in place). A metal grate, which existed over the UST, was removed in June 1988. Sand and four inches of concrete were set in place of the former grate.

#### D. Describe the circumstances of the discovery of the release:

The Marley Pump Company planned to expand their pump testing facilities. The new facility would include three USTs. Prior to installing and constructing the testing facility, an environmental assessment needed to be conducted. The Marley Pump Company contracted Leance Environmental Services, Inc. to conduct a subsurface investigation. On March 18, 1992, Sonotek drilled one borehole, BT-1, near the southeast corner of the testing facility. The data from this investigation indicated the presence of BTEX constituents in water only. See attached report.

|                                |                                   |
|--------------------------------|-----------------------------------|
| Soil, Benzene < 0.5 ug/g       | Water, Benzene - 0.61 mg/l        |
| Soil, Ethylbenzene < 0.5 ug/g  | Water, Ethylbenzene - 0.25 mg/l   |
| Soil, Toluene < 0.5 ug/g       | Water, Toluene - 0.29 mg/l        |
| Soil, Xylene < 0.5 ug/g        | Water, Xylene - 0.25 mg/l         |
| TH Est. Hydrocarbons < 10 ug/g | Water, TH Hydrocarbons - 3.7 mg/l |

#### E. Describe the initial actions taken to abate the petroleum release:

The Marley Pump company contracted Mercah & Eddy, Inc. to conduct a licensed subsurface investigation to investigate the lateral and vertical extent of contamination, if any.

### II. Current Site Conditions

(CONFINE YOUR ANSWER TO THE SPACE PROVIDED)

#### A. Provide a general description of the site geology:

The subsurface soil is light brown to brown with grey-orange mottling. The soil consists mainly of the USCS classification ML (very soft silty clay) overlies silt to the terminus of each boring. The borings monitoring wells terminated into a hard, dry clay with some fine pebbles (glacial till).

The area of interest can be regionally characterized by thick sequences of loess (windblown silt and clays), sand, and gravel. Also present is a glacial till left behind by glacial activity.

#### B. Description of the existing UST system:

*This page may be photocopied if more than 6 units exist at this site.*

| Tank Number                                                  | 1                                   | 2                                   | 3                                   | 4                                   | 5                        | 6                        |
|--------------------------------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| Capacity (gallons)                                           | 500 gal                             | 500 gal                             | 500 gal                             | 500 gal                             |                          |                          |
| Product Stored                                               | Gasoline                            | Unleaded                            | Unleaded                            | Unleaded                            |                          |                          |
| Construction Material                                        | Steel                               | Steel                               | Steel                               | Steel                               |                          |                          |
| Operational Status                                           | CHECK ONE BOX ONLY FOR EACH TANK    |                                     |                                     |                                     |                          |                          |
| Contains product                                             | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Contains NO product & is out-of-use                          | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> |
| C. Tank & line tightness tests required by IDNR? (Yes or no) | No                                  | Yes                                 | Yes                                 | Yes                                 |                          |                          |
| Tank Leak Rate (gph)                                         | NA                                  |                                     |                                     |                                     |                          |                          |
| Line Leak Rate (gph)                                         | NA                                  |                                     |                                     |                                     |                          |                          |

#### >> Attach Appendix "IUCS" - Tank & Line Tightness Testing Results

If tanks or lines were tightness tested, attach report of all results, supporting field data and the third party evaluation of the leak detection system. Explain the cause of testing anomalies and discuss any corrective actions or repairs made to the system.

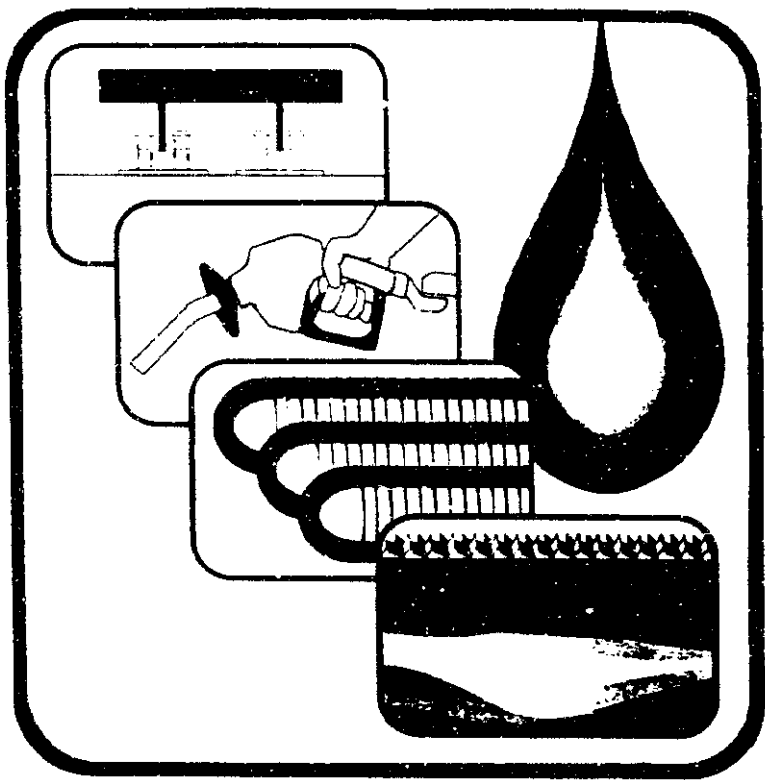
#### >> D. Attach Appendix "HSD" - Topographical Site Map

Provide a topographic map of the site and surrounding area developed from work done at the site, city surveys where available or USGS maps. Legible contour elevation differentials no greater than 10 feet must be provided. Two foot contour intervals are preferred.

622: 1: 7: 143  
ATTACHMENT - SENECA ENVIRONMENTAL SERVICES INC. REPORT

# SENECA

ENVIRONMENTAL SERVICES, INC.



Des Moines • Davenport • Omaha

**SENECA**  
ENVIRONMENTAL SERVICES

Seneca Environmental Services, Incorporated  
5112 Tenthmont Avenue • Davenport, Iowa 52807 • (319) 386-2522

April 3, 1992

Mr. Ed Dunning  
Marley Pump Company  
500 East 59th Street  
Davenport, Iowa 52807

SUBJECT: SITE INVESTIGATION FOR PLACEMENT OF  
UNDERGROUND STORAGE TANKS FOR  
MARLEY PUMP COMPANY  
500 EAST 59TH STREET, DAVENPORT, IOWA

Dear Mr. Dunning:

We are submitting this letter summarizing our observations of the site investigation and soil testing at the above-referenced location.

On March 18, 1992, Seneca Environmental Services performed a site investigation at Marley Pump Company in the vicinity of the proposed underground storage tank location. The investigation involved the advancement of one borehole to a depth of 25-feet and obtaining a water sample from the borehole. A representative of Seneca Environmental Services was on-site to observe the activities, classify the soils, and to obtain the soil and water samples. The location of the borehole is indicated on the attached site plan map.

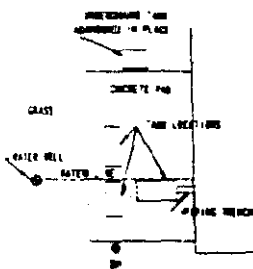
Continued on Page #2

# SITE MAP



PAGE NO. 01

Scale 1" = 20'



**JOHN HARLEY PUMP COMPANY**  
500 EAST 30TH STREET  
DAYTON, OHIO

BUILDING

IRON PIPE-LINE

SEWMA Environmental Services

Harley Pump Company  
Dayton, Ohio

NO DATE

PAGE

1



Mr. Ed Dunning  
Marley Pump Company  
March 26, 1992

A soil sample was obtained from the seven-foot depth of the borehole for laboratory analysis. A water sample was obtained from the 20-foot depth of the borehole for analysis. The samples were packaged, labeled and placed in iced storage for delivery to NET Midwest Laboratories, Inc., located in Cedar Falls, Iowa, for analysis of benzene, toluene, ethyl benzene, and total xylenes (BTEX), for total petroleum hydrocarbons (TPH) as gasoline, and for total extractable hydrocarbons (TEH) as found in diesel fuel. A chain-of-custody form accompanied the samples from the sampling site to the laboratory. The results of the laboratory analyses are listed in the appendix of this letter.

Based upon the preliminary field work and the laboratory results for the soil and water samples, it appears that the soil in the vicinity of the proposed tank excavation is not contaminated with hydrocarbons from gasoline or diesel. The analytical laboratory results for the soil sample are below the current Iowa Department of Natural Resources (IDNR) action guidelines of 100 mg/kg (ppm) for TPH and TEH. The laboratory analytical results for the water sample were found to be 610 µg/L (ppb), which is above the IDNR action guidelines of 5.0 µg/L (ppb).

Mr. Ed Dunning  
Marley Pump Company  
March 26, 1992

According to the soil boring log, the soils in the vicinity appear to be tight, firm silty clays with low permeability. The hydraulic conductivity of such soils ranges between  $10^{-3}$  cm/sec and  $10^{-4}$  cm/sec (Freeze, et al), with an average grain size of 0.004 mm (Pettijohn, et al). Although the groundwater in the vicinity of the tank pit appears to be impacted at the 20-foot depth, the soils at the seven-foot depth do not appear to have been affected by any hydrocarbon impact. The seven-foot depth is slightly below the level of the bottom of the tank pit.

A large metal pipe runs through the tank pit excavation from a water well located approximately 20-feet west of the site in the down-gradient direction. The pipe is approximately two-feet below the surface of the ground and is set directly in the clay soils, with no sand backfill around it. The pipe is situated at a level above the midline of the proposed tanks and the tanks are of double-walled construction. It is not likely that this pipe will act as a conduit for any hydrocarbon migration if a leak occurs in one of the underground storage tanks. The monitoring system which will be installed will indicate any fuel loss from the tanks or lines and the leak would be mitigated before product could migrate along the pipe line.

Mr. Ed Dunning  
Marley Pump Company  
March 26 1992

Due to the fact that Seneca Environmental Services has identified the presence of certain hazardous substances or contaminants, you should be aware that you have, or may have, the duty to report said findings to federal, state, or local authorities in a timely manner. Unless otherwise informed, Seneca Environmental Services assumes that said reporting has been properly completed by you.

You should send a copy of this letter to the IDNR for their project file regarding underground storage tank activities at your facility. Please send it to:

Mr. Verne Schrunk  
Iowa Department of Natural Resources  
Underground Storage Tank Division  
Wallace State Office Building, 5th Floor  
500 East Grand Avenue  
Des Moines, Iowa 50319.

One copy of this letter should be sent to GAB for reimbursement purposes. Please send it to:

Mr. Neil Searcy  
GAB  
P.O. Box 3817  
Des Moines, Iowa 50322.

Continued on Page #6

Mr. Ed Dunning  
Marley Pump Company  
March 26, 1992

Seneca Environmental Services appreciates the opportunity of addressing your underground storage tank needs. If you have any questions concerning this letter or if we can be of further assistance, please give us a call.

Sincerely,  
Seneca Environmental Services

*Heather Morton-Davis*

Heather Morton-Davis  
Registered Groundwater Professional, #1252

#### REFERENCES

Freeze, Allan R. and Cherry, John A., 1979, Groundwater, Prentice-Hall, Englewood Cliffs, New Jersey, 604 pp.

Pettijohn, F.J., 1975, Sedimentary Rocks, Harper & Row, New York, New York, 628 pp.

APPENDIX A

SOIL BORING RECORD

# SENECA Environmental Services Inc.

Project Mapley Pump  
 Location Davenport, Iowa  
 Job No. 8460  
 Geologist/Engineer \_\_\_\_\_  
 Drill Crew White/Scribbling

Hole/Well No. BH1  
 Borehole diameter 7.5  
 Total Depth of Hole 25.0 feet  
 Depth to Water 20.0  
 Date Completed 3/18/92

| DEPTH<br>IN FEET | WELL CONSTRUCTION DETAIL | PID VAL | SAMPLE | LITHOLOGY | DESCRIPTION                                                                        |
|------------------|--------------------------|---------|--------|-----------|------------------------------------------------------------------------------------|
| 0                |                          |         |        | CL        | Brace - Topsoil                                                                    |
| 2                |                          |         |        | CL        | Silty Clay, brown, no odor                                                         |
| 4                |                          |         |        |           | Silty Clay, slight odor, dark gray                                                 |
| 6                |                          |         |        |           |                                                                                    |
| 8                |                          |         |        | ML        | Clayey Silt, light gray, no odor                                                   |
| 10               |                          |         |        |           |                                                                                    |
| 12               |                          |         |        |           | Clayey Silt, light brown with fine grains<br>of sand, no odor, damp                |
| 14               |                          |         |        |           |                                                                                    |
| 16               |                          |         |        |           |                                                                                    |
| 18               |                          |         |        | CL        | Silty Clay, dark gray, embedded with fine<br>to medium grained sand, no odor, damp |
| 20               | ▽                        |         |        | CL        | Clay, gray-green, wet, no odor                                                     |
| 22               |                          |         |        |           |                                                                                    |
| 24               |                          |         |        |           |                                                                                    |
| 26               |                          |         |        |           |                                                                                    |
| 28               |                          |         |        |           |                                                                                    |
| 30               |                          |         |        |           |                                                                                    |

Total Depth = 25.0 Feet  
 Soil Sample = 8-8-BH1, 8-7-BH1  
 8-14-BH1  
 Water Sample = W-BH1

**APPENDIX B**

**LABORATORY ANALYTICAL REPORTS**

**FOR**

**SOIL SAMPLES**



NATIONAL  
ENVIRONMENTAL  
TESTING, INC.

NET Midwest, Inc.  
Cedar Falls Division  
704 Enterprise Drive  
P.O. Box 635  
Cedar Falls, IA 50613  
Tel: (319) 277-2461  
Fax: (319) 277-2425

## ANALYTICAL REPORT

Ms. Heather Morton-Davis  
SENECA ENVIRONMENTAL SERV.  
5113 Tremont Avenue  
Davenport, IA 52807

03/30/1992

Sample No.: 163005  
Job Number: 92.2095

Sample Description: S-7 BH-1 Marley Pump  
SOIL

Date Taken: 03/18/1992

Date Received: 03/19/1992

| Parameter                      | Result | Units | Date Analyzed/Analyst |
|--------------------------------|--------|-------|-----------------------|
| Total Extractable Hydrocarbons | <10.   | ug/g  | 03/27/1992 hlk        |
| VOLATILES - BTEX (NONAQUEOUS)  |        |       |                       |
| Benzene                        | <0.5   | ug/g  | 03/24/1992 mkk        |
| Ethylbenzene                   | <0.5   | ug/g  | 03/24/1992 mkk        |
| Toluene                        | <0.5   | ug/g  | 03/24/1992 mkk        |
| Xylenes, Total                 | <0.5   | ug/g  | 03/24/1992 mkk        |
| Total Hydrocarbons             | <10.   | ug/g  | 03/24/1992 mkk        |

Sample introduction performed in reference to EPA Method 5030 (purge & trap). Analysis performed in reference to EPA Method 8015 for volatile organics using flame ionization detection. (Iowa Method OA-1, Revision 7/01/91).

Method Detection Limits: Benzene <0.5 ug/g; Toluene <0.5 ug/g; Xylenes, Total <0.5 ug/g; Total Hydrocarbons <10. ug/g; Ethyl Benzene <0.5 ug/g.

Extractable Hydrocarbons are extracted in accordance with EPA Method 3550 (sonication extraction). Analysis is performed in reference to EPA Method 8100 using flame ionization detection. (Iowa Method OA-2, Revision 7/01/91). Method Detection Limit <10. ug/g

  
R. L. Bindert

received



**NET****NATIONAL  
ENVIRONMENTAL  
TESTING, INC.**NET Midwest, Inc.  
Cedar Falls Division  
704 Enterprise Drive  
P.O. Box 625  
Cedar Falls, IA 50613  
Tel (319) 277-2401  
Fax: (319) 277-2425**ANALYTICAL REPORT**Ms. Heather Morton-Davis  
SENECA ENVIRONMENTAL SERV.  
5113 Tremont Avenue  
Davenport, IA 52807

03/30/1992

Sample No.: 163006  
Job Number: 92.2095Sample Description: W-BH1  
WATER

Marley Pump

Date Taken: 03/18/1992

Date Received: 03/19/1992

|                          | <u>Result</u> | <u>Units</u> | <u>Date Analyzed/Analyst</u> |
|--------------------------|---------------|--------------|------------------------------|
| VOLATILES - BTEX (WATER) |               |              |                              |
| Benzene                  | 0.51          | mg/L         | 03/20/1992 ake               |
| Ethylbenzene             | 0.25          | mg/L         | 03/20/1992 ake               |
| Toluene                  | 0.29          | mg/L         | 03/20/1992 ake               |
| Xylenes, Total           | 0.25          | mg/L         | 03/20/1992 ake               |
| Total Hydrocarbons       | 3.7           | mg/L         | 03/20/1992 ake               |

Sample introduction performed in reference to EPA Method 5030 (purge and trap). Analysis performed in reference to EPA Method 8015 for volatile organics using flame ionisation detection. (Iowa Method OA-1, Revision 7/01/91).

Method Detection Limits: Benzene <0.002 mg/L; Toluene <0.002 mg/L;  
Xylenes, Total <0.002 mg/L; Ethyl Benzene <0.002 mg/L  
Total Hydrocarbons <3.10 mg/L.

  
R. L. Sindert  
Project Manager



**NET Midwest, Inc.**  
Cedar Falls Division  
704 Enterprise Drive  
P.O. Box 625  
Cedar Falls, IA 50613  
Tel: (319) 277-2401  
Fax: (319) 277-2425

### CHAIN OF CUSTODY

|                                             |                                  |
|---------------------------------------------|----------------------------------|
| Client: <u>INCEA Environmental Services</u> | Project Name: <u>Marley Pump</u> |
| Send report to: <u>Heather Davis</u>        | <u>500 E 59th St</u>             |
| Address: <u>5113 Tremont Ave.</u>           | <u>Davenport, IA 52807</u>       |
| Telephone # <u>319-386-2552</u>             | Collected by: <u>Matt White</u>  |

[illegible]

Remarks:

| Relinquished by:            |  | Date Time |  | Received by:                 |  | Date Time |  |
|-----------------------------|--|-----------|--|------------------------------|--|-----------|--|
| Mast White                  |  | 3/4/92    |  |                              |  |           |  |
| Shipping Notes/Isd Comments |  |           |  | Received for NET Midwest by: |  |           |  |
|                             |  |           |  | Eggs - 1st year 3/4/92 8:00  |  |           |  |
| Samples Field Filtered:     |  | ___ Yes   |  | ___ No                       |  |           |  |
| Seals Intact Upon Receipt:  |  | ___ Yes   |  | ___ No                       |  | ___ N/A   |  |

II. Current Site Conditions. Page 6 of 20

B. Description of the existing UST system - 500 gallons UST

Operational Status: Contains no product and is out of use. The UST tank (fill lines, product lines and/or dispensers are not part of the UST system) was abandoned in place (e.g. liquid was removed and sand was placed inside the tank) during the time period August 1987 through November 1987.

Three new USTs were installed in March 1992 for Marley Pump Company's Engineering Lab. The tanks are constructed of double walled steel (Stip3) and have a factory coal tar epoxy coating. Each tank has a capacity of 560 gallons. Tank 1, Registration Number 16157, stores 532 gallons of unleaded gasoline, Tank 2., Registration Number 16158, stores 532 gallons of unleaded gasoline, and Tank 3, Registration Number 16159, stores 76 gallons of unleaded gasoline and 432 gallons of methanol. The tanks were filled on October 5, 1992. All the USTs are operational but no fuel is dispensed; the fuel is recirculated back to the tank. Addition information of interest:

- Vapor probes are in each vapor monitoring wells (monitored by Red Jacket/Marley) - RLM 9000.
- Liquid refraction sensors in the interstitial space between tank walls - RLM 9000.
- Automatic tank gauging. Hard copy printed and retained for Marley's records.
- Internal and external cathodic protection. Cathodic protection test was conducted in february 1993 and is scheduled to be tested again in February 1996.
- Tank piping is above ground and surrounded by a sealed concreted pad and four-inch concrete curb.

## APPENDIX II (C) - TANK & LINE TIGHTNESS TESTING RESULTS

Tank and line tightness testing was not completed on this 500-gallon abandoned in place tank. The tank was closed in place prior to any effective IDNR regulations.

Tank tightness testing was completed for the three newly installed tanks. The tanks passed Seneca Corporation's tank tightness testing with no anomalies. This information is included as part of this appendix.

OCT- 8-93 FRI 10:07

P. 00

JETSET Reply

SENECA CORPORATION

P.O. Box 1208  
17851 244th Ave.  
BETTENDORF, IOWA 52722

(319) 332-8000

Marley Pump Company

500 East 39th Street

Des Moines, IA 50309

DATE April 29, 1992

FILE NO.

ATTENTION Ed Dunning

SUBJECT Red Jacket Installation

☐ URGENT

☐ AS SOON AS POSSIBLE

☒ NO REPLY NEEDED

MESSAGE

Enclosed, please find our corrected final copy of Mike Collier's inspection  
of our installation at the above referenced location.

Please retain for your files.

Thank you,

SIGNED Mary Thomas

DATE OF REPLY

RECEIVED

APR 30 1992

RED JACKET PUMPS  
DAVENPORT, IOWA

SIGNED

OCT 8 1993 10:08

PAGE.000

M.W. Collier Inc.  
949 Nixon Street  
Indianola, Iowa 50125  
515-961-7732

*Corrected Final*

# IOWA UST INSPECTION REPORT

Page 1 of 3

Job Number 112-400-1115

## TANK(S) OWNER

Name Maryle Pump Co

Address 500 E. 59th St.

Davenport, IA 52807

Phone 319-391-8600

## UST REGISTRATION DATA

UNR 112 New Installation

UNR 11

UNR 12

UNR 13

UNR 14

UNR 15

## UST LOCATION

Name Red Jacket Facility

Address 500 E. 59th St.

Davenport, IA

## TYPE OWNERSHIP

Government:

Private/Corporation: X

Phone:

## PROJECT DESCRIPTION

Two Mill Slip, IDW TRANS

Superior, Davenport, IA

TANK Monitor

## CONTRACTOR

Name Seneca Tank

Address 17851 24th Ave

Bettendorf, IA 52722

Phone: 319-332-8000

Installer # 1: Jeff DeLoake

Installer # 2:

NOTES:

## NEW CONSTRUCTION OR REPLACEMENT

Page 2 of 3

Job Name: Red RockeyJob Number: 112-400-1175

## I. PRE-CONSTRUCTION REVIEW

- ☒ Site Plan Reviewed  
☒ Installer Licensed  
☒ Permits Required  
     - Required By: City of Des Moines  
☒ Start Date:  
☒ Iowa DNR Form # 148 Reviewed  
☒ Map Approved

| Yes/No<br>NA/Not Applicable | Date   |
|-----------------------------|--------|
| yes                         | 3/11   |
| yes                         |        |
| yes                         |        |
| yes                         | 3/25   |
| yes                         | 3/1/92 |

## II. Tank Installation

| Tank Data    | #1       | #2       | #3       | #4 | #5 |
|--------------|----------|----------|----------|----|----|
| Type         | 30" Dia  | 30" Dia  | 30" Dia  |    |    |
| Capacity     | 250      | 250      | 250      |    |    |
| Diameter     | 30"      | 30"      | 30"      |    |    |
| Length       | 30"      | 30"      | 30"      |    |    |
| UL #         | 30683    | 30683    | 30683    |    |    |
| Tested       | yes      | yes      | yes      |    |    |
| Type Product | Concrete | Concrete | Concrete |    |    |

- ☒ Tanks Inspected At Delivery  
☒ Tanks Damaged During Shipping  
☒ Proper Excavation Size And Depth  
☒ Type Backfill: Gravel Acceptable?  
☒ Tanks Ballasted  
     Type: Concrete  
☒ Distance Between Tanks: 36" Acceptable?  
☒ Burial Depth: 8-10" Acceptable?  
☒ Mechanical Compaction Used  
☒ Extra Fabric Used  
☒ Construction Vapor Walls Installed  
☒ In Tank Monitor Installed  
     Type: Redox Monitor  
☒ Overflow Installed  
☒ Overflow: Yes  
☒ Secondary Containment, Sump, And/or Interference  
     Monitor Installed  
     Type: Underground Sump  
     Type: Underground Sump

|     |      |
|-----|------|
| yes | 3/27 |
| no  | 3/27 |
| yes | 3/27 |
| yes | 3/27 |
| yes | 3/27 |
| yes | 3/27 |
| yes | 3/27 |
| yes | 3/27 |
| yes | 3/27 |
| yes | 3/27 |
| yes | 3/27 |
| yes | 3/27 |
| yes | 3/27 |
| yes | 3/27 |
| yes | 3/27 |

to Name: Red Zircon

File Number: 112-400-1175

Page 3 of 3

### III. PIPING INSTALLATION

✓=Yes X=No  
NA=Not Applicable

**Deer**

- Type/Piping \_\_\_\_\_ Size \_\_\_\_\_  
Double-Wall \_\_\_\_\_
- Type \_\_\_\_\_
- Required Installation Procedures Followed \_\_\_\_\_
- Burial Depth \_\_\_\_\_
- Type/System \_\_\_\_\_ Section \_\_\_\_\_ Pressure \_\_\_\_\_
- Leak Detectors \_\_\_\_\_
- Type \_\_\_\_\_ Mechanical \_\_\_\_\_ Electrical \_\_\_\_\_
- Flex Connectors \_\_\_\_\_
- Size \_\_\_\_\_
- Where Installed \_\_\_\_\_
- Piping Tested \_\_\_\_\_
- Type/ Test \_\_\_\_\_
- Test Pressure \_\_\_\_\_
- Number Of Leaks \_\_\_\_\_
- Leaks Reported \_\_\_\_\_
- Type Backfill \_\_\_\_\_
- Mechanical Compaction \_\_\_\_\_
- Check Valves At Section Joints \_\_\_\_\_

[illegible]

### 13. FINAL INSPECTION

- Leak Detectors Installed
- Emergency Valves Installed
- In Fault Monitor Operational
- Secondary Containment, Sump, And/OR Interstage Monitors Operational
- Cathodic Test Point Installed
- Electrical System Meets Codes
- Precision Test Oil System

Type Test: Run 9000

CONTINUED: Red Jacket

Results: Failed

- ### ■ As-Built Drawings Completed

Received yes Dec 11/15

- In Other:

- **Conclusions:**

- **Outer**

|     |      |
|-----|------|
| N/A | 4/15 |
| N/A |      |
| yes | 4/15 |
| N/A |      |
| yes | 4/15 |
| yes | 4/15 |
|     |      |
| yes | 4/15 |
| yes | 4/15 |
|     |      |
|     |      |
|     |      |

## Y. C. Chang et al.

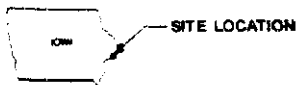
Inspected By: Mike Collier

Approved

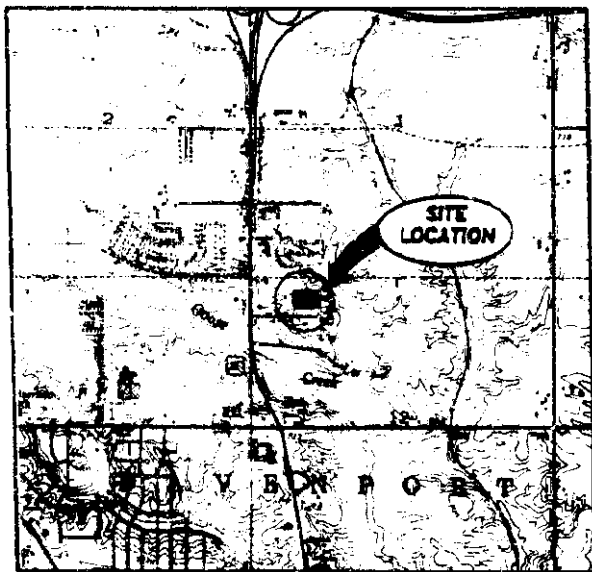
First Approval Date

4/21/92



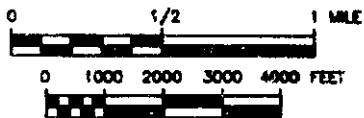


COOK COUNTY  
T 78 N, R 2W SEC. 12



SOURCE: U.S.G.S. DAVENPORT EAST, IOWA - ILL. (1975)  
CONTOUR INTERVAL - 10 FEET

SCALE: 1:24000



# TOPOGRAPHICAL SITE MAP

The Marley Pump Company  
500 E. 59th Street  
Davenport, Iowa

**>> E. Attach Appendix "II(E) - Scaled Site Plan"**

Provide a scaled view (scale 1 inch = 20 to 50 feet) of the site and the immediate surrounding area. It shall show the following, but is not limited to: 1) Location and content of existing and removed USTs, product lines and dispensers. 2) Permanent site features (i.e. buildings, roads, walls, waterways, manholes, etc).

**>> F. Attach Appendix "II(F) - Scaled Site Vicinity Map"**

Provide a scaled (scale 1 inch = 200 to 500 feet) vicinity map showing the site in relation to surrounding general features. It shall show the following, but is not limited to:

- 1) Permanent general features (i.e. buildings, roads, waterways, manholes, etc.)
- 2) Location of properties adjacent to the site affected or potentially affected by the contamination.

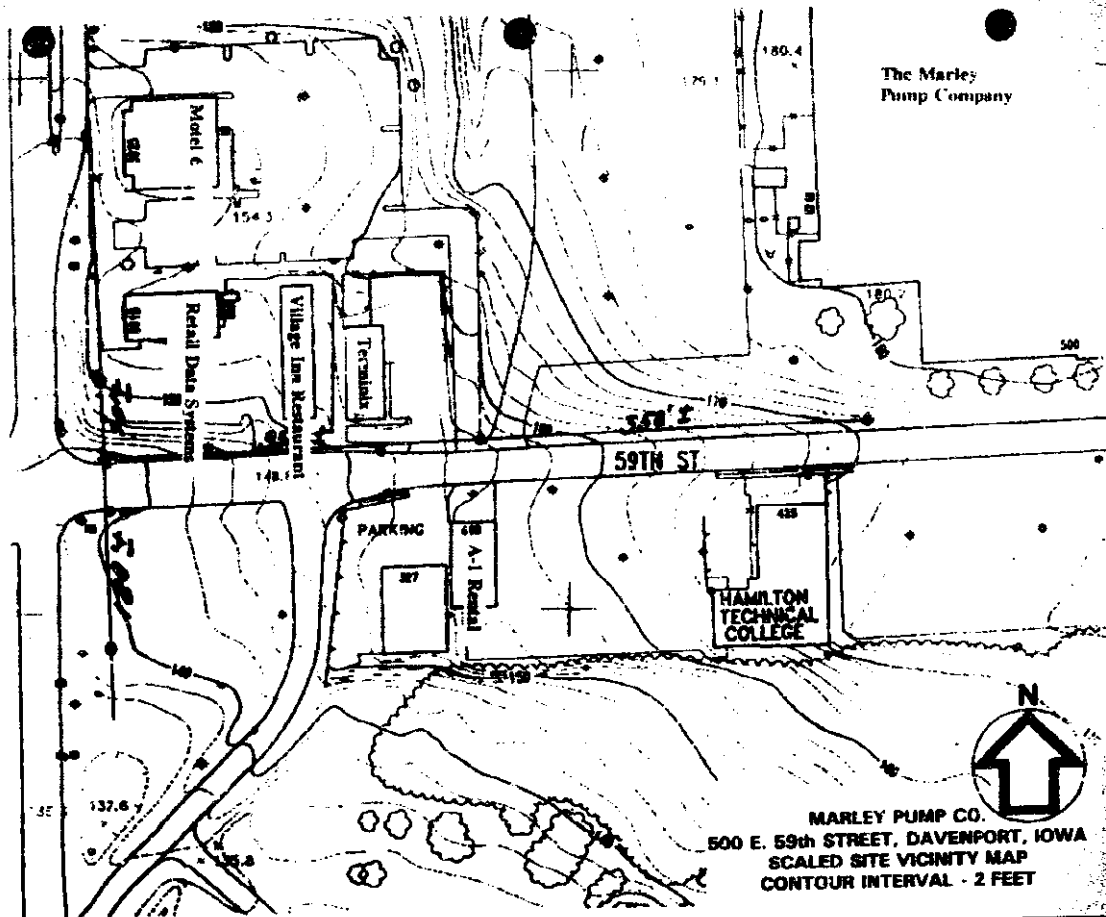
List below the names of owners of property affected or potentially affected by the contamination. Ensure the names correspond to the data provided on appendix "II(F) Scaled Site Vicinity Map."

| Property Owner Name                    | Property Address                    | Owner Mailing Address                                                                                     |
|----------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------|
| 2<br>Hamilton Technical Institute      | 1011 E 53rd Street<br>Davenport, IA | People contacted at this facility did not submit this information after several attempts to contact them. |
| 3<br>Orkin Pest Control                | 501 W 76th Street<br>Davenport, IA  | People at Orkin did not submit this information after several attempts to contact them.                   |
| 4<br>A-1 Rental                        | 59th and Brady<br>Davenport, IA     | The people contacted at this facility did not know the owner's mailing address.                           |
| 5<br>Denny's Restaurant, General Grove | 4200 Brady Street<br>Davenport, IA  | The general manager did not know the mailing address of the property owner.                               |
| 6                                      |                                     |                                                                                                           |
| 7                                      |                                     |                                                                                                           |
| 8                                      |                                     |                                                                                                           |
| 9                                      |                                     |                                                                                                           |
| 10                                     |                                     |                                                                                                           |
| 11                                     |                                     |                                                                                                           |

\* When polling the property owner on whether they obtain their water from private well or the City of Davenport, all property owners indicated that they obtain their water from the City of Davenport.

OWNED BY NAG

BRADY ST



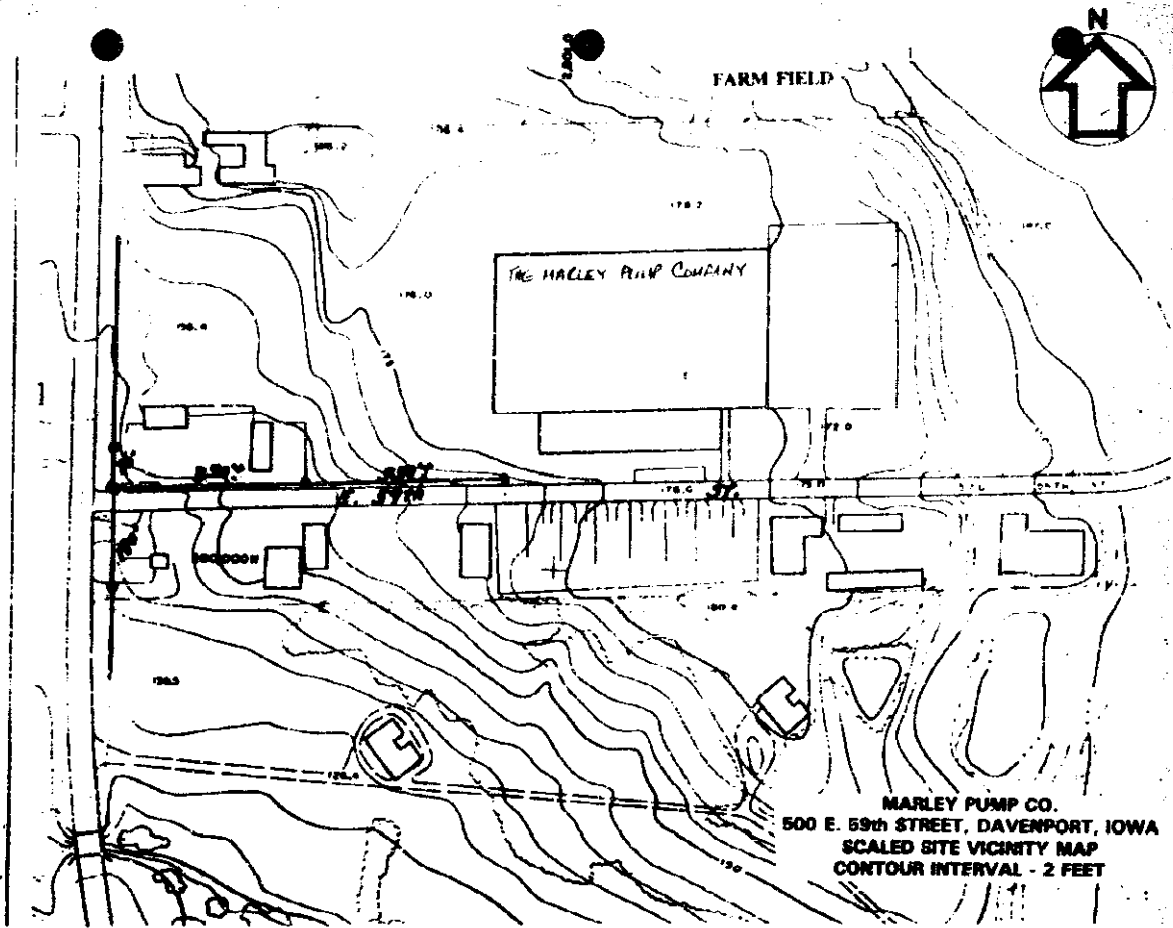
The Marley  
Pump Company

59TH ST

HAMILTON  
TECHNICAL  
COLLEGE



MARLEY PUMP CO.  
500 E. 59th STREET, DAVENPORT, IOWA  
SCALED SITE VICINITY MAP  
CONTOUR INTERVAL - 2 FEET



# FARM FIELD



FARM FIELD

Allen Sign Co.  
Quality Printers  
Machinery and Supply

Eagle Construction

Paddinton Boarding Kennel

Crucible Service Center

Refractory Insulation Supply Inc.

Engineered Seal Products

H&H

Neilson Plumbing  
Campbell Electric  
Iowa Bearing

Aero Plumbing

Crystal Refrigeration

CREEK

Jerro

Waggon Printers

9th Street

Goodwin & Brosius Inc.

U.S. Cable

## EXTENDED SITE VICINITY MAP NO CONTOUR INTERVAL

Contour interval not provided. These sites  
are greater than 1,000 feet away from Markey.

### III. Soil Sampling Methods & Findings

(CONFINE YOUR ANSWER TO THE SPACE PROVIDED)

#### A. Boring number and placement.

Explain and justify the rationale used to determine the number and placement of soil borings. Factors that should be taken into consideration when developing the rationale include site stratigraphy, media conductivity, mobility of contaminants and duration of the release. The number and placement of borings must be sufficient to allow the:

- 1) determination of the lateral and vertical extent of soil contamination;
- 2) accurate description of site stratigraphy; and
- 3) identification of the transition zone between those areas that do and do not exceed the soil contamination cleanup level. The identification of the transition zone will require the construction of contours developed through the interpolation of data. Additional information will be required to substantiate the location of contour lines if it is determined that the data are not consistent with the rationale or data provided or the interpolation technique appear to be questionable.

Metcalf & Eddy's (M&E) investigation was based upon Seneca Environmental's initial environmental investigation and the IAC 138 rules and guidelines. Placement of boring/monitoring wells were dependent upon restrictions of equipment size, underground utilities, buildings, anticipated groundwater flow direction, and preliminary environmental investigations performed by Seneca and Metcalf & Eddy.

MW-1: M&E chose the location of this well due to its close proximity to the abandoned in place UST. The purpose of this well was to verify the presence/absence of petroleum hydrocarbon in the subsurface; to gather water level data to gain a better understanding of the groundwater flow direction; to determine the vertical and lateral extent of potential contamination (this data, use in conjunction with the other well data, will help determine the lateral extent of contamination); to describe the site stratigraphy; and perform a slug test to determine hydraulic conductivity of groundwater.

MW-2: M&E located this well near the anticipated location of where Seneca drilled 511-1. The purpose of this well was to verify the presence/absence of petroleum hydrocarbon in the subsurface; to gather water level data to gain a better understanding of the groundwater flow direction; to determine the vertical and lateral extent of potential contamination (this data, use in conjunction with the other well data, will help determine the lateral extent of contamination); to describe the site stratigraphy; to obtain a Shelby tube sample of soil so that a laboratory permeability test could be conducted (to determine laboratory hydraulic conductivity); and perform a slug test to determine hydraulic conductivity of groundwater.

MW-3: M&E chose the location of this well to obtain water level gauging data away from the influence of building structures; to provide background soil and groundwater quality data away from the influence (upgradient) of the abandoned in place UST; verify the presence/absence of petroleum hydrocarbon in the subsurface; to gather water level data to gain a better understanding of the groundwater flow direction; to determine the vertical and lateral extent of potential contamination (this data, use in conjunction with the other well data, will help determine the lateral extent of contamination); to describe the site stratigraphy away from the influence of potential fill areas (UST area); and perform a slug test to determine hydraulic conductivity of groundwater.

MW-4: This monitoring well location was based on the location of utilities. The purpose of this well is collect groundwater elevation data to better determine the groundwater flow direction, to "broaden" the "fattened" triangle, and to determine how far petroleum hydrocarbons (if any) have migrated downgradient of MW-2.

#### >> B. Attach Appendix "III(B) - Soil Boring Logs"

Complete and attach a DNR form 542-1392 for each soil boring at site.

#### C. Explain the actions taken to prevent cross-contamination between boreholes during installation and sampling.

All decontaminate equipment: augers, split spoons, were decontaminated between each boring and after each use by steam cleaning with a high pressure potable steam water wash. Soil or debris not removable by the high pressure steam were removed by scrubbing with a scrub brush and Abronox and then steam cleaned. The steam cleaner utilized approximately 3,000 psi with temperatures of 200° F.

Equipment such as stainless steel flange, were washed with an Abronox/Distilled water wash and a distilled water rinse.

Each monitoring well was steam cleaned with a high pressure steam potable water wash. After cleaning, the wells were installed by personnel wearing new latex gloves.

# SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

|                                                             |                                      |                                                        |
|-------------------------------------------------------------|--------------------------------------|--------------------------------------------------------|
| Boring/Well #<br>MW-1                                       | Facility Name<br>MARLEY PUMP COMPANY | Facility Address<br>500 E. 59th ST.<br>DAVENPORT, IOWA |
| Boring Depth (Feet) x Diameter (Inches)<br>25' x 6.25"      |                                      | Drilling Method<br>HOLLOW STEM AUGER                   |
| Well Contractor<br>NDECO INC<br>Registration #<br>D-0007201 |                                      | Logged by<br>METCALF & EDDY                            |
| Date & Time Start<br>3/16/92 0910                           | Date & Time End<br>3/16/92 1020      | Ground Surface Elevation (ASL)<br>715.68'              |
|                                                             |                                      | Last Number<br>8LTS84                                  |

| Depth in Feet | Well Construction Details | Blow Count | Sample |                          | PID/TID Reading                       | Rock Formations, Soil Color and Classifications, Observations (moisture, etc.) |
|---------------|---------------------------|------------|--------|--------------------------|---------------------------------------|--------------------------------------------------------------------------------|
|               |                           |            | No.    | Type *                   |                                       |                                                                                |
| 0-2.5         |                           | NA         | 1      | 3" O.D.<br>5' LONG<br>SS | 0 ppm                                 | Moist brown, silty fine sand, trace organics (SM)                              |
| 2.5-5.0       |                           | NA         | 2      |                          | 178 ppm *<br>Questionable PID Reading | Moist brown with gray mottling silt with trace organics (SM)                   |
| 5.0-7.5       |                           | NA         | 3      | 3" O.D.<br>5' LONG<br>SS | PID Not Working Properly              | Brown with gray mottling, moist, silt with trace clay (ML)                     |
| 7.5-10.0      |                           | NA         | 4      |                          | PID Not Working Properly              | Brown with gray mottling, moist, silt with trace clay (ML)                     |
| 10.0-12.5     | ▼ 11.03                   | NA         | 5      | 3" O.D.<br>5' LONG<br>SS | 0 ppm                                 | Brown with gray mottling, moist, soft silt with some clay (ML)                 |
| 12.5-15.0     | ▼ 12.89                   | NA         | 6      |                          | 0 ppm                                 | Brown and gray, moist, soft, clayey silt (ML)                                  |
| 15.0-17.5     |                           | NA         | -      | 3" O.D.<br>5' LONG<br>SS | 0 ppm                                 | Brown and gray, moist, very soft clayey silt (ML)                              |
| 17.5-20.0     |                           | NA         | 8      |                          | 0 ppm                                 | Gray, moist, very soft, clayey silt (ML)                                       |

\* SS (split spoon) HS (hollow stem auger)

|                                                           |       |         |         |  |  |  |  |
|-----------------------------------------------------------|-------|---------|---------|--|--|--|--|
| OBSERVATIONS<br>WATER LEVELS<br>Static Water Level Symbol | Date  | 9/17/92 | 10/1/92 |  |  |  |  |
|                                                           | Level | 12.89   | 11.03   |  |  |  |  |
|                                                           | Time  | 0745    | 0745    |  |  |  |  |

# SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

|                                                             |                                      |                                                        |
|-------------------------------------------------------------|--------------------------------------|--------------------------------------------------------|
| Boring/Well #<br>MW-1                                       | Facility Name<br>MARLEY PUMP COMPANY | Facility Address<br>500 E. 59th ST.<br>DAVENPORT, IOWA |
| Boring Depth (Feet) x Diameter (Inches)<br>25' x 6.25"      |                                      | Drilling Method<br>HOLLOW STEM AUGER                   |
| Well Contractor<br>INDECO INC<br>Registration # 10. 0007201 |                                      | Logged by<br>METCALF & EDDY                            |
| Date & Time Start<br>9/16/92 0910                           | Date & Time End<br>9/16/92 1020      | Ground Surface Elevation (ASL)<br>715.68'              |
|                                                             |                                      | Last Number<br>8LTS84                                  |

| Depth in Feet | Well Construction Details | Blow Count | Sample |                          | MD/NO Reading | Rock Formations, Soil, Color and Classifications, Observations (moisture, etc.)                 |
|---------------|---------------------------|------------|--------|--------------------------|---------------|-------------------------------------------------------------------------------------------------|
|               |                           |            | No.    | Type *                   |               |                                                                                                 |
| 20.0-22.5     |                           | NA         | 9      | 5' O.D.<br>5' LONG<br>SS | 0 ppm         | Gray moist soft clayey silt (ML)                                                                |
| 22.5-25.0     |                           | NA         | 10     |                          | 0 ppm         | Gray moist silty clay (CL). At 24.5-25.0ft. Dry, hard, glacial till with many fine pebbles (CL) |
| EOB - 25ft    |                           |            |        |                          |               |                                                                                                 |

\* SS (split spoon) MS (hollow stem auger)

|                                                           |       |  |  |  |  |  |
|-----------------------------------------------------------|-------|--|--|--|--|--|
| OBSERVATIONS<br>WATER LEVELS<br>Static Water Level Symbol | Date  |  |  |  |  |  |
|                                                           | Level |  |  |  |  |  |
|                                                           | Time  |  |  |  |  |  |



# SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

|                                                              |                                      |                                                        |
|--------------------------------------------------------------|--------------------------------------|--------------------------------------------------------|
| Boring/Well #<br>MW-2                                        | Facility Name<br>MARLEY PUMP COMPANY | Facility Address<br>500 E. 59th ST.<br>DAVENPORT, IOWA |
| Boring Depth (Feet) x Diameter (Inches)<br>25' x 6.25"       |                                      | Drilling Method<br>HOLLOW STEM AUGER                   |
| Well Contractor<br>INDECO INC<br>Registration #<br>D 0007201 |                                      | Logged by<br>METCALF & EDDY                            |
| Date & Time Started<br>9/16/92 1110                          | Date & Time Ended<br>9/16/92 1220    | Ground Surface Elevation (ASL)<br>715.56'              |
|                                                              |                                      | Last Number<br>8LTS84                                  |

| Depth in Feet     | Well Construction Details | Blow Count | Sample |                          | PID/FID Reading | Rock Formations, Soil Color and Classifications, Observations (moisture, etc.)                                            |
|-------------------|---------------------------|------------|--------|--------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------|
|                   |                           |            | No.    | Type *                   |                 |                                                                                                                           |
| 0-2.5             |                           | NA         | 1      | 3" O.D.<br>5' LONG<br>SS | 0 ppm           | Black-brown, damp, silty fine sand, with trace organics (SM)<br>Black, damp, fine sand with medium sand, little silt (SW) |
| 2.5-5.0           |                           | NA         | 2      |                          | 0 ppm           | Brown damp hard clayey silt (ML)                                                                                          |
| 5.0-7.5           |                           | NA         | 3      | 3" O.D.<br>5' LONG<br>SS | 0 ppm           | Brown-black damp clayey silt, soft, trace organics (ML)                                                                   |
| 7.5-10.0          |                           | NA         | 4      |                          | 0 ppm           | Light brown and gray mottled moist, soft clayey silt (ML)                                                                 |
| 10.0-12.5         |                           | NA         | 5      | 3" O.D.<br>5' LONG<br>SS | 0 ppm           | Brown and gray, moist, soft clayey silt (ML)                                                                              |
| 12.5-15.0 ▼ 13.70 |                           | NA         | 6      |                          | 0 ppm           | Brown and gray, moist, soft clayey silt (ML)                                                                              |
| 15.0-17.5 ▼ 15.67 |                           | NA         | 7      | 3" O.D.<br>5' LONG<br>SS | 0 ppm           | Brown and gray mottled moist, soft clayey silt (ML)                                                                       |
| 17.5-20.0         |                           | NA         | 8      |                          | 0 ppm           | Brown and gray mottled very moist, soft clayey silt (ML)                                                                  |

\* SS (sp. spoon) MS (mudstone stem auger)

|                                                           |       |         |         |  |  |  |  |
|-----------------------------------------------------------|-------|---------|---------|--|--|--|--|
| OBSERVATIONS<br>WATER LEVELS<br>Static Water Level Symbol | Date  | 9/17/92 | 10/1/92 |  |  |  |  |
|                                                           | Level | 13.67   | 13.70   |  |  |  |  |
|                                                           | Time  | 0745    | 0745    |  |  |  |  |

# SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

|                                                        |                                           |                                                        |
|--------------------------------------------------------|-------------------------------------------|--------------------------------------------------------|
| Boring/Well #<br>MW-2                                  | Facility Name<br>MARLEY PUMP COMPANY      | Facility Address<br>500 E. 59th ST.<br>DAVENPORT, IOWA |
| Boring Depth (Feet) x Diameter (Inches)<br>25' x 6.25" |                                           | Drilling Method<br>HOLLOW STEM AUGER                   |
| Well Contractor<br>NDECO INC                           | Logged by<br>METCALF & EDDY               |                                                        |
| Registration #<br>D. 0007201                           | Date & Time Start<br>9/16/92 1110         | Date & Time End<br>9/16/92 1220                        |
|                                                        | Ground Surface Elevation (ASL)<br>715.56' | Last Number<br>8LTS84                                  |

| Depth<br>& Feet | Well Construction<br>Details | Blow<br>Count | Sample<br>No.      Type *       | PID/FID<br>Reading | Rock Formations, Soil,<br>Color and Classifications,<br>Observations (moisture, etc.)               |
|-----------------|------------------------------|---------------|---------------------------------|--------------------|-----------------------------------------------------------------------------------------------------|
| 20.0-20.5       |                              | NA            | 9      3" O.D.<br>5' LONG<br>SS | 0 ppm              | Gray, moist, very soft<br>silty clay (CL)                                                           |
| 22.5-25.0       |                              | NA            | 10                              | 0 ppm              | Gray damp silty clay with<br>some medium sand (SM/SC)<br>Gray dry hard, glacial till<br>(1 ft) (CL) |
| EOB - 25ft      |                              |               |                                 |                    |                                                                                                     |

\* SS (split spoon) HS (Hollow stem auger)

|                             |       |  |  |  |  |  |
|-----------------------------|-------|--|--|--|--|--|
| OBSERVATIONS                | Date  |  |  |  |  |  |
| WATER LEVELS                | Level |  |  |  |  |  |
| Static Water Level Symbol * | Time  |  |  |  |  |  |

# SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

|                                   |                                       |                                                         |
|-----------------------------------|---------------------------------------|---------------------------------------------------------|
| Boring/Wel #<br>MW-1              | Facility<br>Name: WARLEY PUMP COMPANY | Facility<br>Address: 500 E. 59th ST.<br>DAVENPORT, IOWA |
| Boring Depth: Feet<br>15          | Diameter: Inches<br>4.25              | Drilling Method<br>HOLLOW STEM AUGER                    |
| Well Contractor<br>NDECO INC      | Registered #<br>0-000720              | Logged by<br>METCALF & EDDY                             |
| Date & Time Start<br>9/16/92 1330 | Date & Time End<br>9/16/92 1450       | Ground Surface Elevation ASL<br>715.23                  |
|                                   |                                       | Last Number<br>BLT584                                   |

| Depth<br>in Feet | Well Construction<br>Details | Blow<br>Count | Sample<br>No. | Sample<br>Type           | PH/ED<br>Reading | Rock Formations, Soil,<br>Color and Classifications,<br>(Observations (moisture, etc.)) |
|------------------|------------------------------|---------------|---------------|--------------------------|------------------|-----------------------------------------------------------------------------------------|
| 0-2.5            |                              | NA            | 1             | 3" O.D.<br>5' LONG<br>SS | 0 ppm            | Brown, damp, silt with<br>some clay, little fine<br>sand (ML)                           |
| 2.5-5.0          |                              | NA            | 2             |                          | 0 ppm            | Brown, damp, soft, clayey<br>silt, little fine sand,<br>trace organics (ML)             |
| 5.0-7.5          |                              | NA            | 3             |                          | 0 ppm            | Light brown with gray<br>mottling, damp, very<br>soft clayey silt (ML)                  |
| 7.5-10.0         |                              | NA            | 4             |                          | 0 ppm            | Brown with gray mottling<br>damp to moist, very soft,<br>clayey silt (ML)               |
| 10.0-12.5        |                              | NA            | 5             | 3" O.D.<br>5' LONG<br>SS | 0 ppm            | Light brown with gray<br>mottling, very soft clayey<br>silt (ML)                        |
| 12.5-15.0        |                              | NA            | 6             |                          | 0 ppm            | Light brown with gray<br>mottling very soft clayey<br>silt (ML)                         |
| 15.0-17.5        |                              | NA            | 7             | 3" O.D.<br>5' LONG<br>SS | 141 ppm          | Gray moist very soft<br>clayey silt (ML)                                                |
| 17.5-20.0        |                              | NA            | 8             |                          | 0 ppm            | Gray moist very soft<br>clayey silt (ML)                                                |

\* SS (split spoon) HS (hollow stem auger)

|                                                             |       |         |         |  |  |  |  |
|-------------------------------------------------------------|-------|---------|---------|--|--|--|--|
| OBSERVATIONS<br>WATER LEVELS<br>Static Water Level Symbol v | Date  | 9/17/92 | 10/1/92 |  |  |  |  |
|                                                             | Level | 11.62   | 9.7     |  |  |  |  |
|                                                             | Time  | 0745    | 0745    |  |  |  |  |

vt

DNR FORM 542-1392

# SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

|                                                        |                                           |                                                        |
|--------------------------------------------------------|-------------------------------------------|--------------------------------------------------------|
| Boring/Well #<br>MW-1                                  | Facility Name<br>MARLEY PUMP COMPANY      | Facility Address<br>500 E. 59th ST.<br>DAVENPORT, IOWA |
| Boring Depth (Feet) & Diameter (inches)<br>25' & 6.25" | Drilling Method<br>HOLLOW STEM AUGER      |                                                        |
| Well Contractor<br>NDECO INC                           | Logged by<br>METCALF & EDDY               |                                                        |
| Registration #<br>01 0007201                           | Date & Time Start<br>9/16/92 1030         | Date & Time End<br>9/16/92 1450                        |
|                                                        | Ground Surface Elevation (ASL)<br>715.23' | Log Number<br>8LTS84                                   |

| Depth<br>in Feet | Well Construction<br>Details | Blow<br>Count | Sample |                          | PID/PID<br>Reading | Rock Formations, Soil,<br>Color and Classifications,<br>Observations (moisture, etc.)             |
|------------------|------------------------------|---------------|--------|--------------------------|--------------------|---------------------------------------------------------------------------------------------------|
|                  |                              |               | No.    | Type *                   |                    |                                                                                                   |
| 20.0-22.5        |                              | NA            | 9      | 5" O.D.<br>5' LONG<br>SS | 0 ppm              | Gray, moist very soft clay<br>silt, 20-21 ft (ML)<br>Gray dry hard clay with<br>fine pebbles (CL) |
| 22.5-25.0        |                              | NA            | 10     |                          | 0 ppm              | Gray dry hard clay<br>with fine pebbles-glacial<br>till (CL)                                      |
| E.O.B. - 25ft    |                              |               |        |                          |                    |                                                                                                   |

\* SS (spiral spoon) HS (hollow stem auger)

|                           |       |  |  |  |  |  |  |
|---------------------------|-------|--|--|--|--|--|--|
| OBSERVATIONS              | Date  |  |  |  |  |  |  |
| WATER LEVELS              | Level |  |  |  |  |  |  |
| Static Water Level Symbol | Time  |  |  |  |  |  |  |

# SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

|                                                                    |                                         |                                                        |
|--------------------------------------------------------------------|-----------------------------------------|--------------------------------------------------------|
| Boring/Well #<br>4W-4                                              | Facility<br>Name MARLEY PUMP COMPANY    | Facility<br>Address 500 E. 59th ST.<br>DAVENPORT, IOWA |
| Boring Depth (Feet) x Diameter (Inches)<br>19.5' x 6.25"           | Drilling Method<br>HOLLOW STEM AUGER    |                                                        |
| Well Contractor<br>Registration # TERRACON CONSULTANTS<br>D. 40278 | Logged by<br>D. STORY<br>METCALF & EDDY |                                                        |
| Date & Time Start<br>10/19/93 1340                                 | Date & Time End<br>10/19/93 1505        | Ground Surface<br>Elevation (ASL) 715.11'              |
|                                                                    |                                         | Last<br>Number 8LTS84                                  |

| Depth<br>in Feet | Well Construction<br>Details | Blow<br>Count | Sample<br>No. Type       | PID/FID<br>Reading | Rock Formations, Soil,<br>Color and Classifications,<br>Observations (moisture, etc.)                                                                 |
|------------------|------------------------------|---------------|--------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.0-4.0          |                              | 3/3/2/3       | 2" O.D.<br>2' LONG<br>SS | 0.2 ppm            | Brown w/ orange striations,<br>mod. dense, slightly plastic<br>damp, silty clay (CL)                                                                  |
| 4.5-6.5          |                              | 2/2/2/3       | 2" O.D.<br>2' LONG<br>SS | 0.2 ppm            | Top 10" - Brown, dense,<br>moist plastic clay (CL)<br>Bottom 5" - black/gray,<br>dry, slightly plastic clay<br>(CC)                                   |
| 7.0-9.0          |                              | 1/1/2/1       | 2" O.D.<br>2' LONG<br>SS | 0 ppm              | Brown, mod. dense, damp,<br>slightly plastic silt with<br>some clay. At bottom 2"<br>brown/gray mottled (ML)                                          |
| 9.5-11.5         |                              | 1/3/4/4       | 2" O.D.<br>2' LONG<br>SS | 0 ppm              | Tan/gray, moist, slightly<br>plastic mod. dense silt.<br>Bottom 5" - has orange<br>striations (ML)                                                    |
| 12.0-14.0        |                              | 2/2/2/3       | 2" O.D.<br>2' LONG<br>SS | 0 ppm              | Tan/gray with orange<br>striations, mod. dense,<br>slightly plastic, wet, silt<br>(ML)                                                                |
| 14.5-16.5        | ▼ 16.16                      | 2/2/2/3       | 2" O.D.<br>2' LONG<br>SS | 0 ppm              | Tan/gray with orange<br>striations, mod. dense,<br>slightly plastic, wet, silt<br>(ML)                                                                |
| 17.0-19.0        |                              | 2/2/1/2       | 2" O.D.<br>2' LONG<br>SS | 0 ppm              | Tan/gray with orange<br>striations, mod. dense,<br>slightly plastic, wet, silt<br>(ML)                                                                |
| 19.5-21.5        |                              | 2/2/3/3       | 2" O.D.<br>2' LONG<br>SS | 0 ppm              | Top 12" - gray with orange<br>striations, silty clay, dense<br>slightly plastic (CL)<br>Bottom 12" - gray, very<br>dense, moist, fine gravel<br>(TLL) |

\* SS (split spoon) \* S (hollow stem auger)

## OBSERVATIONS

### WATER LEVELS

Electric Water Level Summary

Date

Level

10/20/93

16.16

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

347.1249

\* SS (split spoon) HS (hollow stem auger)

|                            |       |  |  |  |  |  |
|----------------------------|-------|--|--|--|--|--|
| OBSERVATIONS               | Date  |  |  |  |  |  |
| WATER LEVELS               | Level |  |  |  |  |  |
| State Water Level Symbol : | Time  |  |  |  |  |  |







# SENECA Environmental Services Inc.

Project Harley Pump  
 Location Daynsport, Iowa  
 Job No. 8460  
 Geologist/Engineer \_\_\_\_\_  
 Drill Crew White/Scribbling

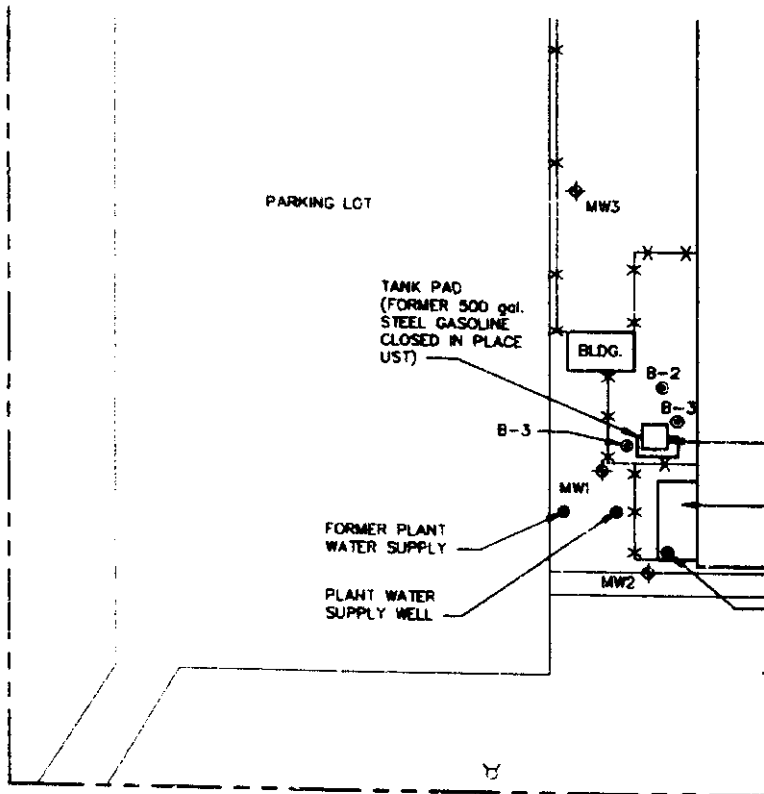
Hole/Well No. BH1  
 Borehole diameter 7.5  
 Total Depth of Hole 25.0 feet  
 Depth to Water 20.0  
 Date Completed 3/18/92

| DEPTH<br>IN FEET | WELL CONSTRUCTION DETAIL | WATER<br>LEVEL | SOIL<br>TYPE | LITHOLOGY | DESCRIPTION                                                                        |
|------------------|--------------------------|----------------|--------------|-----------|------------------------------------------------------------------------------------|
| 0                |                          |                |              | CL        | Grass - Topsoil                                                                    |
| 2                |                          |                |              | CL        | Silty Clay, brown, no odor                                                         |
| 4                |                          |                |              |           | Silty Clay, slight odor, dark gray                                                 |
| 6                |                          |                |              |           |                                                                                    |
| 8                |                          |                |              | ML        | Clayey Silt, light gray, no odor                                                   |
| 10               |                          |                |              |           |                                                                                    |
| 12               |                          |                |              |           | Clayey Silt, light brown with fine grains<br>of sand, no odor, damp                |
| 14               |                          |                |              |           |                                                                                    |
| 16               |                          |                |              |           |                                                                                    |
| 18               |                          |                |              | CL        | Silty Clay, dark gray, embedded with fine<br>to medium grained sand, no odor, damp |
| 20               |                          |                |              | CL        | Clay, gray-green, wet, no odor                                                     |
| 22               |                          |                |              |           |                                                                                    |
| 24               |                          |                |              |           |                                                                                    |
| 26               |                          |                |              |           |                                                                                    |
| 28               |                          |                |              |           |                                                                                    |
| 30               |                          |                |              |           |                                                                                    |

Total Depth - 25.0 Feet  
 Soil Sample - S-6-BH1, S-7-BH1  
 S-14-BH1  
 Water Sample - W-BH1



APPENDIX II(F) - SCALED VICINITY MAP



EAST 50th STREET



SCALE IN FEET

### LEGEND

- = PROPERTY LINE
- +— = FENCE
- ⊕ = FIRE HYDRANT
- ◆ MW3 = MONITORING WELL
- ⊙ B1 = SOIL BORING
- = WELL

MANUFACTURING BUILDING

NO PRODUCT LINES OR DISPENSERS WERE USED FOR 500 gal. UST. THIS WAS A TEST TANK ONLY.

SHED

LEAN TO  
(OPERATING  
UST SYSTEM)

FORMER  
TEST WELL

MW4

OFFICE BUILDING

### USTs

- 1 -- 500 GALLON MANUFACTURED STEEL GASOLINE UST. NO PRODUCT LINES, FILL LINES, OR DISPENSERS ASSOCIATED WITH THIS UST. ABANDONED IN PLACE 8/87 - 11/87.
- 3 - 580 GALLON DOUBLE WALL STEEL WITH STIP3 TANKS. THE USTs WERE INSTALLED 3/92 AND CONTAIN UNLEADED GASOLINE OR METHONAL. NO UNDER YARD PIPING - ALL ABOVE GROUND. NO FUEL IS DISPENSED. FUEL IS RECIRCULATED BACK TO TANKS. THESE ARE TEST TANKS ONLY.

### SCALED SITE PLAN

The Morley Pump Company  
500 E. 59th Street  
Davenport, Iowa

PARKING LOT

TANK PAD  
(FORMER 500 gal.  
STEEL GASOLINE  
CLOSED IN PLACE  
UST)

B-1  
.0158  
711.68

MW1  
.0066J  
706.18  
000855  
688.18

FORMER PLANT  
WATER SUPPLY

PLANT WATER  
SUPPLY WELL

MW3  
~~<0.010~~  
707.73  
0.016  
700.23

BLDG.

MW2  
~~<0.010~~  
710.56

EAST 59th STREET



0 25 50 100



SCALE IN FEET

### LEGEND

- = PROPERTY LINE
- +—+— = FENCE
- ⊕ = FIRE HYDRANT
- ⊕ MW3 = MONITORING WELL
- ⊕ B1 = SOIL BORING
- = WELL
- J = ESTIMATED VALUE  
CONCENTRATION BELOW  
LABORATORY DETECTION  
LIMIT.
- .0062J = CONC. OF TPH IN PPM
- 709.18 = SOIL SAMPLE ELEVATION

\* DUPLICATE SAMPLE YIELD EXACT RESULTS

#### NOTE:

MW1, MW2, & MW3 WERE USED TO DETERMINE  
IN-SITU HYDRAULIC CONDUCTIVITY. A  
LABORATORY PERMEABILITY TEST WAS  
CONDUCTED FROM SOIL COLLECTED FROM MW2.

ELEVATIONS WERE MEASURED AGAINST MEAN  
SEA LEVEL.

NOT ENOUGH DATA POINTS FOR A PLUME MAP.

MW4 DATA COLLECTED ON 10/19/93

## SOIL CONTAMINATION PLUME MAP

The Marley Pump Company  
500 E. 59th Street  
Davenport, Iowa

METCALF & EDDY

MANUFACTURING BUILDING

3  
588

13  
18

SHED

LEAN TO  
OPERATING  
(ST SYSTEM)

FORMER  
TEST WELL

MW4  
ND  
705.61

OFFICE BUILDING

## IV. Groundwater Sampling Methods & Findings

(CONFINE YOUR ANSWER TO SPACE PROVIDED)

### A. Boring number and placement.

Explain and justify the rationale used to determine the number and placement of ground-water monitoring wells. Factors that could be taken into consideration when developing the rationale include site stratigraphy, media conductivity, mobility of contaminants and duration of the release. The number and placement of wells must be sufficient to allow the 1) determination of the lateral and vertical extent of groundwater contamination, 2) accurate description of site stratigraphy, and 3) identification of the transition zone between those areas that do and do not exceed the contamination cleanup level. The identification of the transition zone will require the construction of contours developed through the interpolation of data. Additional information will be required to substantiate the location of contour lines if it is determined that the lines are not consistent with the rationale or data provided, or the interpolation techniques appear to be questionable.

Consideration of boring placement was given so that the most data can be obtained from one desirable soil boring/monitoring well location. Restrictions of boring/monitoring well placement included utility location, equipment size, and obstructions. Furthermore, rules and regulations of the IAC 135 were considered for soil boring/monitoring well placement. Four monitoring wells were chosen to help develop a groundwater contour map. Also, the wells were placed in such a way so as to help determine the extent of contamination (lateral and vertical), provide background data, and verify other consultants data.

(See Section III - Soil Sampling Methods and Findings, Page 8 of 20, for further details on boring/monitoring well placement).

Three soil borings were drilled as close as possible to the abandoned in place UST. The purpose of these borings was to determine if petroleum hydrocarbons are prevalent in the subsurface close to the UST. Boring placement was restricted by size of equipment and proximity of utilities to the selected borehole.

### > B. Attach Appendix "IV(B) - Monitoring Well Construction Diagram"

Complete and attach a DNR form 542-1392 for each monitoring well constructed at the site.

### C. Explain permanent monitoring well construction. If the following well construction material or dimensions vary, indicate the variations on DNR Form 542-1392.

- 1) method of cleaning well components prior to installation. Steam cleaning: 3000 psi with water temperatures of 200° F.
- 2) casing and screen material. 2-inch diameter flush threaded PVC.
- 3) screen slot size. 0.010 inch wide slotted.
- 4) how the sections of casings and screens are connected. Flush threaded joints.
- 5) method used to install filter pack and seals. See Attachment
- 6) actions taken to prevent cross-contamination of wells during construction and sampling.  
The monitoring wells were pressure steam washed prior to their insertion into the borehole. Clean latex gloves were used to handle all downhole materials.
- 7) monitoring well development procedures.  
Bail with a pre-cleaned (Alconox and distilled water) 5-foot long bailer. Bail either 3-5 well volumes of water until pH, specific conductivity, and temperature are stable, or until dry. In this case, the wells were developed until dry.

### D. For samples collected from boreholes: (Frequency casing and screen are required prior to sample collection.)

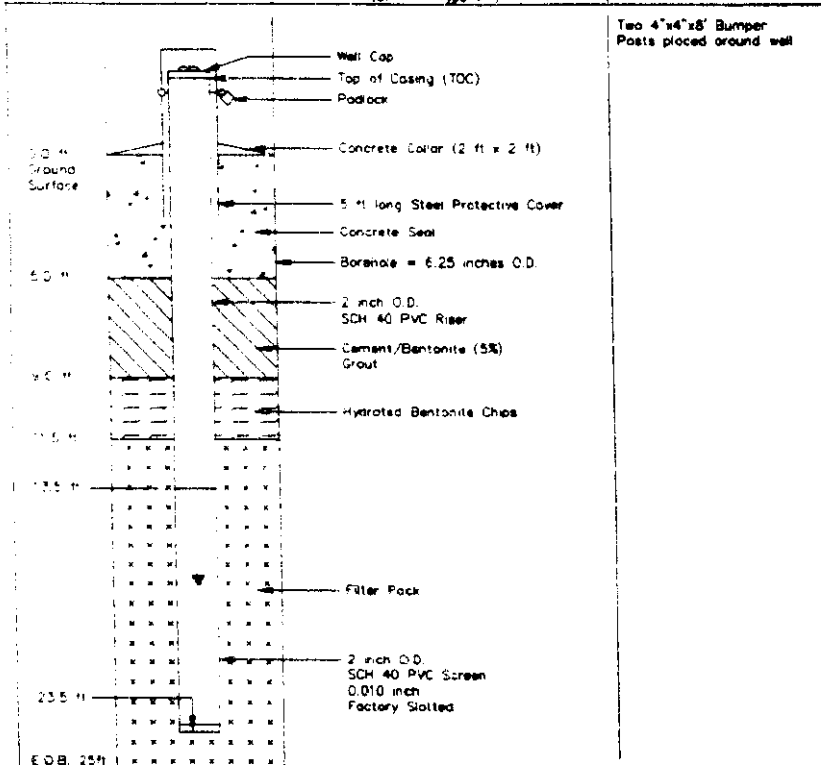
- 1) Describe the type and use of temporary casing and screen.
- 2) Explain and justify the adequacy of well development procedures to ensure a representative sample.





# SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

|                                                        |                                          |                                                                                |
|--------------------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------|
| Boring/Well #<br>MW-2                                  | Facility Name<br>MARLEY PUMP COMPANY     | Facility Address<br>500 E. 59th ST.<br>DAVENPORT, IOWA                         |
| Boring Depth (Feet) x Diameter (Inches)<br>15' x 6.25" | Drilling Method<br>HOLLOW STEM AUGER     |                                                                                |
| Well Contractor<br>INDECO INC                          | Logged by<br>METCALF & EDDY              |                                                                                |
| Registration #<br>D. 0007201                           | Date & Time Start<br>9/16/92 11:50       | Date & Time End<br>9/16/92 12:20                                               |
| Date & Time Start<br>9/16/92 11:50                     | Ground Surface Elevation (ASL)<br>715.54 | Lust Number<br>8LTS84                                                          |
| Depth in Feet                                          | Well Construction Details                | Blow Count                                                                     |
|                                                        |                                          | Sample No. Type                                                                |
|                                                        |                                          | PID/FID Reading                                                                |
|                                                        |                                          | Rock Formations, Soil Color and Classifications, Observations (moisture, etc.) |

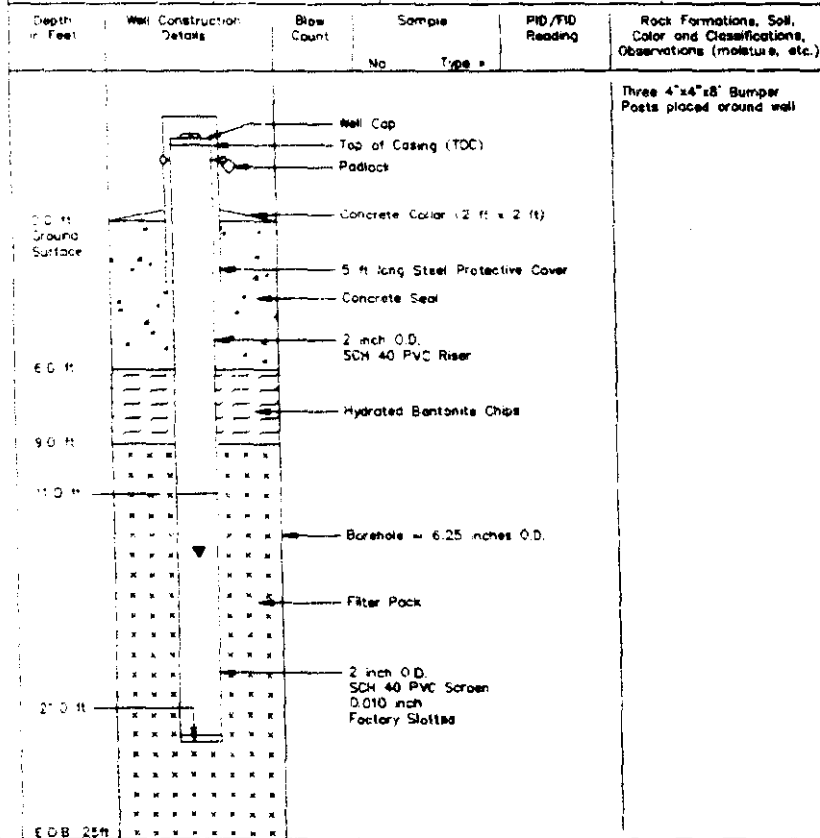


\* SS (sp. spoon) HS (hollow stem auger)

|                             |       |         |          |  |  |  |  |
|-----------------------------|-------|---------|----------|--|--|--|--|
| OBSERVATIONS                | Date  | 9/16/92 | 10/26/93 |  |  |  |  |
| WATER LEVELS                | Level | 17.59   | 14.59    |  |  |  |  |
| Static Water Level Symbol v | Time  | 12:30   | 04:30    |  |  |  |  |

# SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

|                                                        |                                      |                                                        |
|--------------------------------------------------------|--------------------------------------|--------------------------------------------------------|
| Boring/Well #<br>MW-3                                  | Facility Name<br>MARLEY PUMP COMPANY | Facility Address<br>500 E. 59th ST.<br>DAVENPORT, IOWA |
| Boring Depth (Feet) x Diameter (Inches)<br>25' x 6.25" | Drilling Method<br>HOLLOW STEM AUGER |                                                        |
| Well Contractor<br>INDECO INC                          | Logged by<br>METCALF & EDDY          |                                                        |
| Registration #<br>10.0007201                           | Date & Time Start<br>9/16/92 1330    | Date & Time End<br>9/16/92 1450                        |
| Ground Surface Elevation (ASL)<br>745.23               |                                      | Last Number<br>8LTS84                                  |



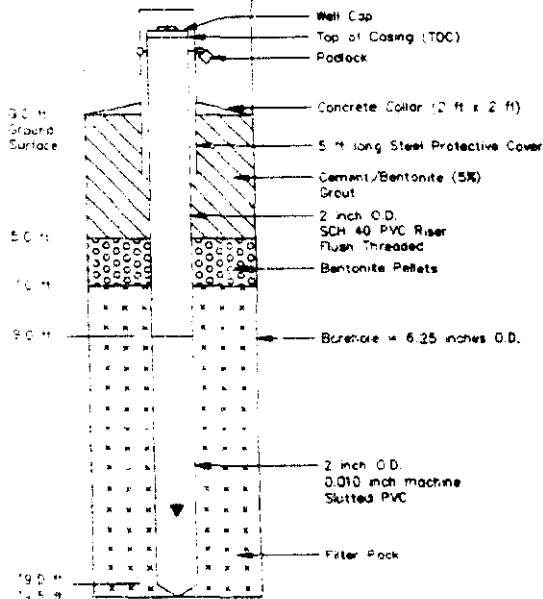
SS (split spoon) HS (hollow stem auger)

|                                                           |       |         |          |  |  |  |  |
|-----------------------------------------------------------|-------|---------|----------|--|--|--|--|
| OBSERVATIONS<br>WATER LEVELS<br>Static Water Level Symbol | Date  | 9/16/92 | 10/26/92 |  |  |  |  |
|                                                           | Level | 13.94   | 11.70    |  |  |  |  |
|                                                           | Time  | 1450    | 1530     |  |  |  |  |

# SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

|                                                          |                                      |                                                        |
|----------------------------------------------------------|--------------------------------------|--------------------------------------------------------|
| Boring/Well #<br>MA-4                                    | Facility Name<br>MARLEY PUMP COMPANY | Facility Address<br>500 E. 59th ST.<br>DAVENPORT, IOWA |
| Boring Depth (Feet) x Diameter (Inches)<br>19.5' x 6.25" | Drilling Method<br>HOLLOW STEM AUGER |                                                        |
| New Contractor<br>Registration #                         | TERRACON CONSULTANTS<br>D. 40278     | Logged by<br>D. STORY<br>METCALF & EDDY                |
| Date & Time Start<br>10/19/93 1340                       | Date & Time End<br>10/19/93 1505     | Ground Surface Elevation (ASL)<br>715.11'              |
|                                                          |                                      | Last Number<br>8LTS84                                  |

| Depth in Feet | Well Construction Details | Blow Count | Sample No | Type | PID/FID Reading | Rock Formations, Soil, Color and Classifications, Observations (moisture, etc.) |
|---------------|---------------------------|------------|-----------|------|-----------------|---------------------------------------------------------------------------------|
|---------------|---------------------------|------------|-----------|------|-----------------|---------------------------------------------------------------------------------|



SS (split spoon) HS (hollow stem auger)

OBSERVATIONS  
WATER LEVELS

Date  
Level  
10/20/93  
15.18  
0270

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|--|--|--|--|--|--|

### E. Explain and justify the adequacy of groundwater sampling and well purging methods.

Well purging: The monitoring wells were purged with a pre-cleaned PVC bailer and new rope. Usually, 3 - well volumes of water are removed so that new groundwater, more representative of the aquifer, will be sampled. One well volume is calculated as:  $3.14(r)^2 \times 48 \text{ gal/ft}$ . In this case, the wells were purged dry. Groundwater sampling: Groundwater samples were collected from the four on-site monitoring wells with a disposable Teflon bailer and new rope. The water from the monitoring well was placed immediately into 40 ml. vial, placed on ice (4° C), and shipped by express courier to Southwest Laboratory of Oklahoma.

### F. Groundwater Data for Contour Map Development (SURVEY DATA FROM ADJACENT SITES MAY BE UTILIZED)

| Well/<br>Boring<br>Number | Date<br>Measured | Static Water<br>Level (ASL)<br>(to 0.01 ft) | Water Level Corrected<br>due to Free Product<br>(Y/N/No) | Product Depth | Ground Surface<br>Elevation (ASL)<br>to 0.1 ft) |
|---------------------------|------------------|---------------------------------------------|----------------------------------------------------------|---------------|-------------------------------------------------|
| MW-1                      | 4/7/92           | 85.04                                       | N/A                                                      | 0 inches      | 97.95                                           |
| MW-2                      | 4/7/92           | 82.12                                       | N/A                                                      | 0 inches      | 97.79                                           |
| MW-3                      | 4/7/92           | 85.88                                       | N/A                                                      | 0 inches      | 97.50                                           |
|                           |                  |                                             |                                                          | inches        |                                                 |
| MW-1                      | 4/1/92           | 86.92                                       | N/A                                                      | 0 inches      | 97.95                                           |
| MW-2                      | 4/1/92           | 84.64                                       | N/A                                                      | 0 inches      | 97.79                                           |
| MW-3                      | 4/1/92           | 87.88                                       | N/A                                                      | 0 inches      | 97.50                                           |
|                           |                  |                                             |                                                          | inches        |                                                 |
| MW-1                      | 10/19/93         | 702.13 (ASL)                                | N/A                                                      | 0 inches      | 715.48 (ASL)                                    |
|                           | 10/19/93         | 702.04 (ASL)                                | N/A                                                      | 0 inches      |                                                 |
| 2                         | 11/17/93         | 704.35 (ASL)                                | N/A                                                      | 0 inches      | 715.56 (ASL)                                    |
|                           | 11/17/93         | 704.97 (ASL)                                | N/A                                                      | 0 inches      |                                                 |
| 3                         | 11/17/93         | 703.34 (ASL)                                | N/A                                                      | 0 inches      | 715.23 (ASL)                                    |
|                           | 11/17/93         | 703.37 (ASL)                                | N/A                                                      | 0 inches      |                                                 |
| 4                         | 11/17/93         | 703.95 (ASL)                                | N/A                                                      | 0 inches      | 715.11 (ASL)                                    |
|                           |                  |                                             |                                                          | inches        |                                                 |
|                           |                  |                                             |                                                          | inches        |                                                 |

\*Describe below the correction method used to determine the static water level.

Because product was not on the water surface, correction methods to determine the static water level were not necessary.

Describe the benchmark used to survey for groundwater surface elevations.

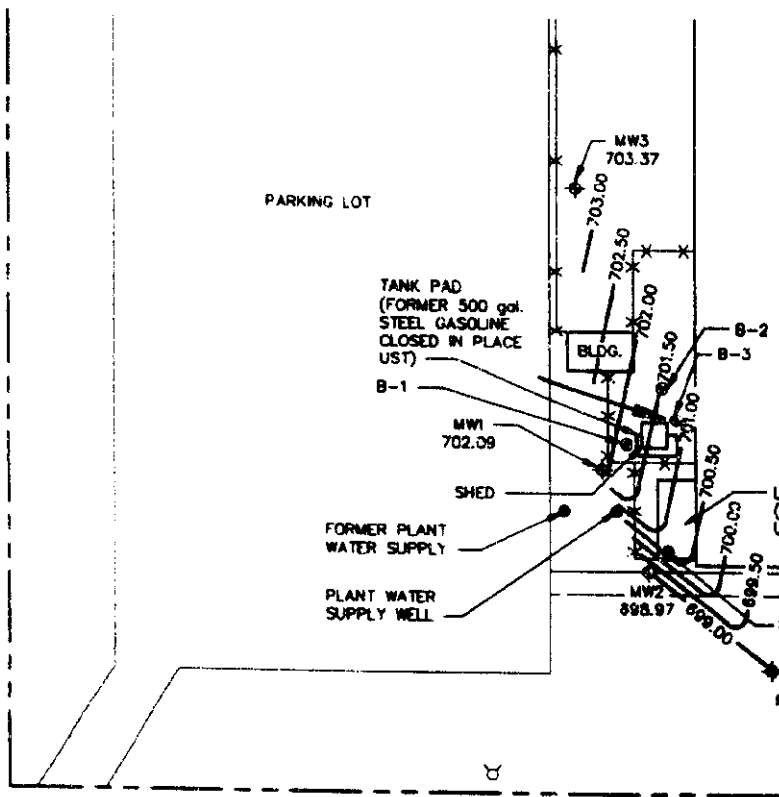
The borings/monitoring wells were surveyed (ASL) using a manhole cover located southwest of the Marley Pump Company, on top of a pump house, and 700 feet east of Brady Street on the north side of 59th Street. The benchmark was provided by the City Engineering Department of Des Moines, Iowa.

### >> G. Attach Appendix "IV(G)- Groundwater Contour Map"

Provide a groundwater contour map based on work done at the site and the adjacent area. All wells at the site must be shown on the map. Wells constructed in different aquifers must be identified. Indicate the groundwater flow direction with an arrow. Groundwater contours and elevations at each data point used for contouring must be labeled on the map. Contours must be constructed with curved water level elevations. Measurements of static water level and depth to the bottom of the wells must be shown. An adequate number of water levels must be measured in each well to determine the static water level. Static water levels must be measured to the nearest 0.01 foot. Identify wells used to determine hydraulic conductivity.

- C. Explain permanent monitoring well construction. Page 10 of 20  
5) Method to install filter pack and seals.

The material was placed in the annular space of the hollow stem auger and monitoring well by pouring sand from a bag and bentonite pellets from a bucket. As the materials were placed into the annular space, the hollow stem augers were incrementally raised so the material (sand, bentonite pellets) would fall out of the augers and between the well and native soil. The cement was placed into the annular space by pouring the mixture from a wheelbarrow (the annular space, when filled with sand and bentonite pellets, was shallow enough that pouring was more feasible than a tremmie pipe).



PARKING LOT

TANK PAD  
(FORMER 500 gal.  
STEEL GASOLINE  
CLOSED IN PLACE  
UST)

B-1

MW1  
702.09

SHED

FORMER PLANT  
WATER SUPPLY

PLANT WATER  
SUPPLY WELL

MW3  
703.37

703.00

702.50

702.00

701.50

701.00

700.50

700.00

699.50

699.00

MW2  
698.97

EAST 59th STREET



0 25 50 100

SCALE IN FEET

### LEGEND

- — — — — = PROPERTY LINE
- 702.50 — = GROUNDWATER CONTOUR
- + — + — = FENCE
- ⛑ = FIRE HYDRANT
- ⬥ MW3 = MONITORING WELL
- 703.37 = GROUNDWATER ELEVATION
- ⊙ B1 = SOIL BORING
- = WELL
- ➡ = APPARENT GROUNDWATER FLOW DIRECTION

MANUFACTURING BUILDING

MEAN TO  
OPERATING  
(ST SYSTEM)

FORMER  
TEST WELL

MW4  
98.95

OFFICE BUILDING

### NOTES:

MW1, MW2, & MW3 WERE USED TO DETERMINE  
HYDRAULIC CONDUCTIVITY.

ELEVATIONS WERE MEASURED AGAINST MEAN  
SEA LEVEL.

GROUNDWATER ELEVATION DATA COLLECTED  
ON OCTOBER 20, 1993.

GROUNDWATER FLOW DIRECTION - EAST

## GROUNDWATER CONTOUR MAP

The Marley Pump Company  
500 E. 59th Street  
Davenport, Iowa

METCALF & EDDY



#### H. Describe and explain the following:

- 1) identify the methodology and device used to determine static groundwater levels.

An interphase probe (IP) is a device used to measure the level of both free-phase hydrocarbons and water. The water level measurement was taken on the north side of the top of the PVC casing. The water level was recorded when an audible tone was evident. The IP is capable of measuring water to within 0.01" accuracy.

- 2) provide confirmation that the methodology used will provide the required levels of accuracy.

The MicroTip helps the user through a 12-step process to ensure that the PID is calibrated appropriately. The MicroTip is calibrated to display concentrations in units equivalent to ppm. First, zero air, which contains no ionizable gases or vapors, is used to set the zero point. The span gas, containing a known concentration of a photoionizable gas or vapor, is used to set the sensitivity. But isobutylene, at 100 ppm in air, is recommended as a span gas during all calibration procedures.

- 3) groundwater flows and any anomalous water levels.

Anomalous groundwater levels did not exist during this sampling round.

- 4) fluctuations in water levels with special emphasis on those which may alter general groundwater gradient or flow direction.

No change of groundwater flow direction occurred during this sampling period.

Static water levels were taken on September 16, 1992; October 2, 1992; and October 19 and 20, 1993.

#### >> I. Attach Appendix "IWD - Groundwater Contamination Plume Maps"

Provide groundwater contamination plume maps depicting the full extent of free phase product and dissolved phase contamination exceeding the groundwater corrective action levels under 135.7(9) and the levels of groundwater contamination within the plume. The extent of off-site groundwater contamination must be investigated. Label each data point with the contaminant concentrations used to determine the extent of the plume. The map must contain a sufficient number of data points to adequately justify the construction of plume contours. Identify free product thickness.

#### V. Sampling Quality Control

*(Confine Your Answer to the Space Provided)*

Provide a statement that indicates the quality control/quality assurance (QC/QA) procedures used during the site investigation were at least as stringent as those contained in IDNR's Leaking Underground Storage Tank Quality Assurance Plan.

The Marley Pump Company's consultant, M&E, followed IDNR's QA/QC plan if not more stringent QA/QC procedures. M&E's prepared a QAPP to conduct this field work. It exceeded those requirements required by IDNR.

#### VI. Hydrogeological Cross-Sections

##### >> Attach Appendix "VI - Hydrogeological Cross-Section Diagram"

Develop, from the borings not used required to identify the extent of contamination, stratigraphically correlated hydrogeologic cross-sections or three-dimensional diagrams which adequately define the spatial relationships of subsurface materials at the site. The cross-sections should illustrate the materials in the contamination zone. The sections or diagrams must include the following information:

- 1) Identification of types and characteristics of the geological materials present.
- 2) Identification of contact zones between different geological materials, noting zones of high permeability or fractures.
- 3) Detailed borehole information including location, depth of termination and zone of saturation.

#### VII. Hydraulic Conductivity *(CONFINE YOUR ANSWER TO THE SPACE PROVIDED)*

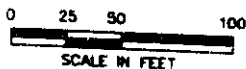
- A. Determine and record here the hydraulic conductivity of subsurface materials at the site. Identify borings and wells used to determine hydraulic conductivity. Include calculations and data used to obtain the values.

The Bower-Rice calculation for hydraulic conductivity was used. Buildups tests were performed in three monitoring wells: MW-1, MW-2, and MW-3. A hydraulic conductivity test was not conducted in MW-4 because of the uniform stratigraphy across the site. Hydraulic conductivity tests were performed to illustrate the uniform magnitude across the site.

*(See Attachment for Calculations of conductivity)*

- B. Indicate the method used.

MAN - 10000



### LEGEND

- = PROPERTY LINE
- = FENCE
- ⊕ = FIRE HYDRANT
- ◆ MW3 = MONITORING WELL
- = WELL
- ND = NONE DETECTED
- (.0079) = UNITS IN mg/l
- J = ESTIMATED VALUE CONCENTRATION BELOW LABORATORY DETECTION LIMIT

MANUFACTURING BUILDING

RED

CAN TO  
OPERATING  
ST SYSTEM)

FREE PRODUCT NOT PRESENT

THIS MAP DEPICTS ONLY THOSE LEVELS  
THAT EXCEED THE IOWA STATE ACTION  
LEVEL FOR BENZENE - .005 mg/l.

INSUFFICIENT DATA FOR CONTOURS

DATA COLLECTED ON 10/26/93

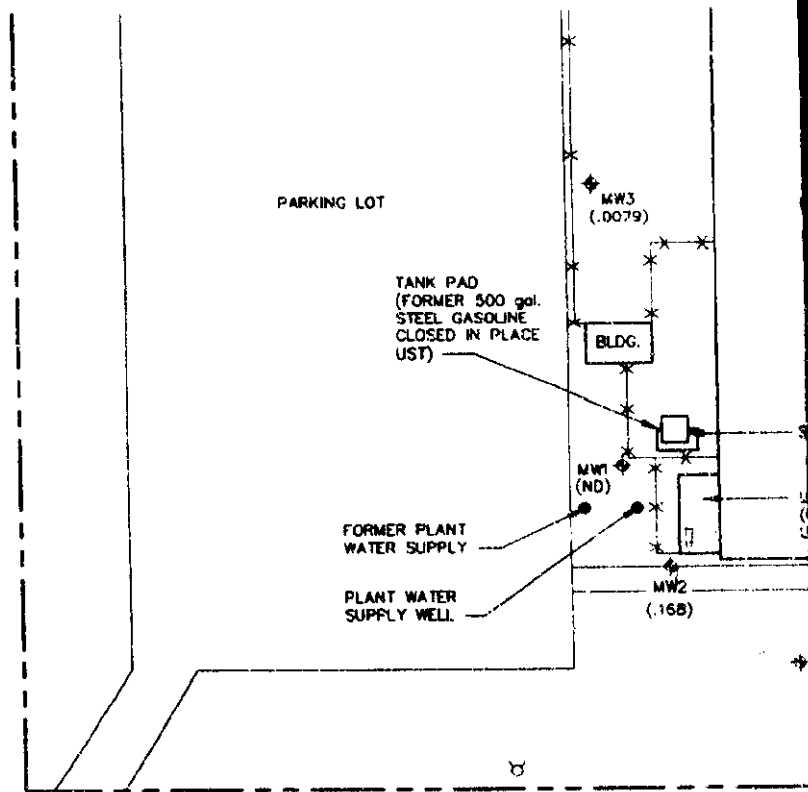
OFFICE BUILDING

MW4  
(ND)

## BENZENE GROUNDWATER CONTAMINATION PLUME MAP

The Marley Pump Company  
500 E. 59th Street  
Davenport, Iowa

METCALF & EDDY





0 25 50 100

SCALE IN FEET

### LEGEND

- — — — — = PROPERTY LINE
- • — • — = FENCE
- ⊕ = FIRE HYDRANT
- ◆ MW3 = MONITORING WELL
- = WELL
- ND = NONE DETECTED
- (.0029) = UNITS IN mg/l
- J = ESTIMATED VALUE  
CONCENTRATION BELOW  
LABORATORY DETECTION  
LIMIT

MANUFACTURING BUILDING

PHED

LEAN TO  
OPERATING  
JUST SYSTEM)

FREE PRODUCT NOT PRESENT

ETHYL BENZENE CONCENTRATIONS DID NOT  
EXCEED THE IOWA STATE ACTION LEVEL  
OF 12.0 mg/l. THUS, NO PLUME WAS  
CONSTRUCTED.

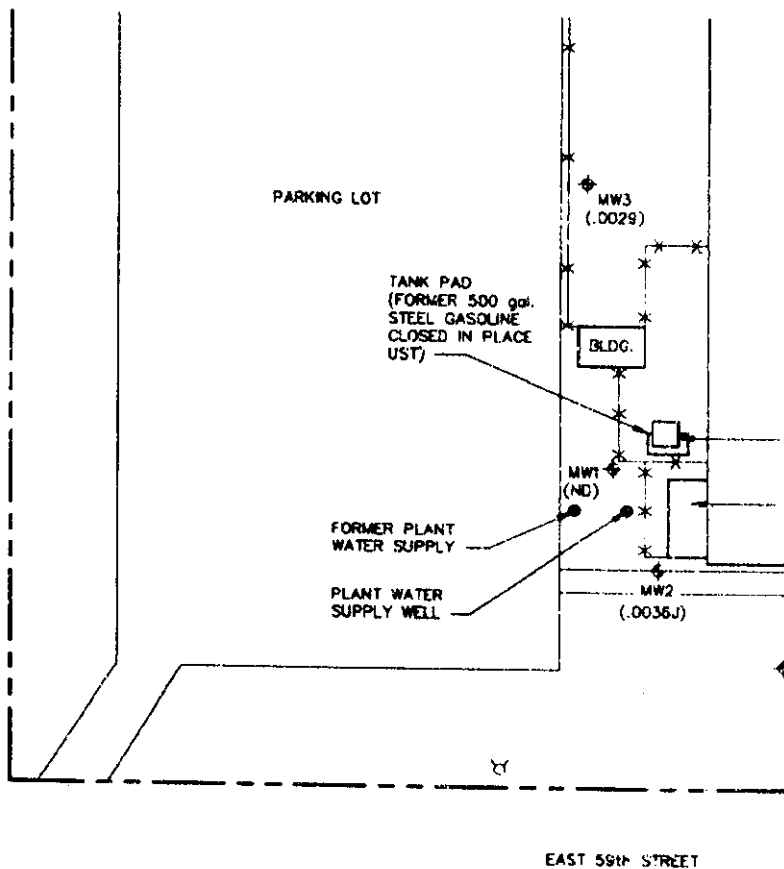
INSUFFICIENT DATA FOR CONTOURS

DATA COLLECTED ON 10/20/93

## ETHYL BENZENE GROUNDWATER CONTAMINATION PLUME MAP

The Marley Pump Company  
500 E. 59th Street  
Davenport, Iowa

METCALF & EDDY





0 25 50 100

SCALE IN FEET

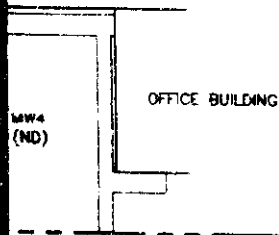
### LEGEND

- = PROPERTY LINE
- +—+—+— = FENCE
- ⊕ = FIRE HYDRANT
- ◆ MW3 = MONITORING WELL
- = WELL
- ND = NONE DETECTED
- (.0256) = UNITS IN mg/l
- J = ESTIMATED VALUE  
CONCENTRATION BELOW  
LABORATORY DETECTION  
LIMIT

MANUFACTURING BUILDING

SHED

LEAN TO  
OPERATING  
(ST SYSTEM)



FREE PRODUCT NOT PRESENT

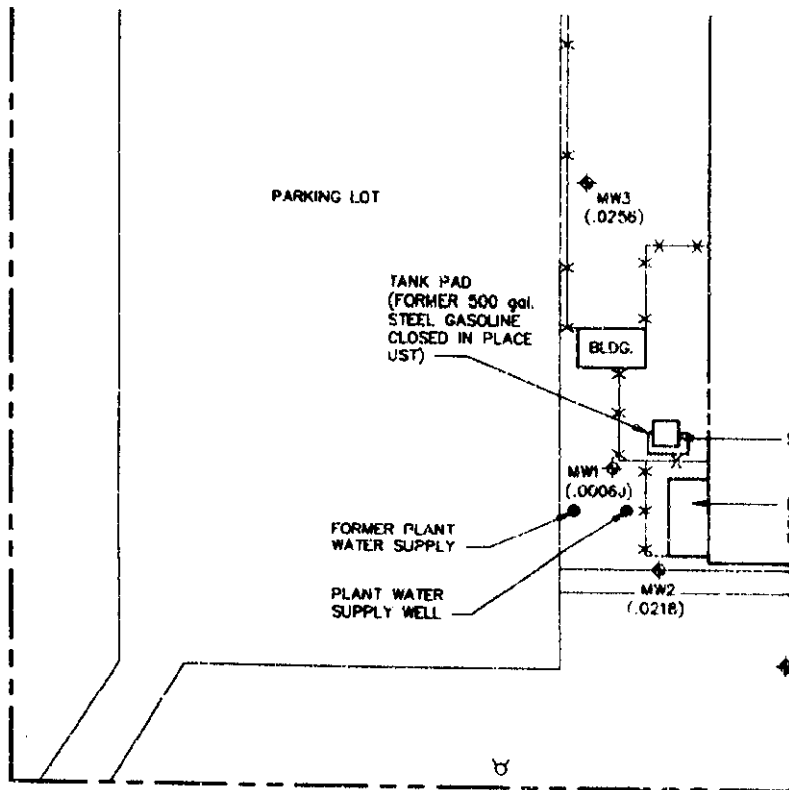
TOLUENE LEVELS DID NOT EXCEED THE  
IOWA STATE ACTION LEVEL OF 2.42 mg/l.  
THUS, NO CONTOURS WERE CONSTRUCTED.

INSUFFICIENT DATA FOR CONTOURS

DATA COLLECTED ON 10/20/93

## TOLUENE GROUNDWATER CONTAMINATION PLUME MAP

The Marley Pump Company  
500 E. 59th Street  
Davenport, Iowa



EAST 59th STREET

**PARKING LOT**

TANK PAD  
(FORMER 500 gal.  
STEEL GASOLINE  
CLOSED IN PLACE  
UST) —

MW3  
(.0061)

BLDG.

NW1-  
(.0008J)

FORMER PLANT  
WATER SUPPLY

PLANT WATER  
SUPPLY WELL

— NW2 —  
(.175)

**EAST 59th STREET**





0 25 50 100



SCALE IN FEET

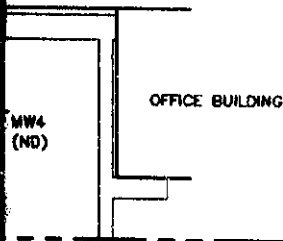
### LEGEND

- = PROPERTY LINE
- +--- = FENCE
- ⌵ = FIRE HYDRANT
- ◆ MW3 = MONITORING WELL
- = WELL
- ND = NONE DETECTED
- (.0061) = UNITS IN mg/l
- J = ESTIMATED VALUE, CONCENTRATION BELOW LABORATORY DETECTION LIMIT

MANUFACTURING BUILDING

SHED

SEAN TO  
OPERATING  
(WST SYSTEM)



OFFICE BUILDING

MW4  
(ND)

FREE PRODUCT NOT PRESENT

XYLENE CONCENTRATIONS DID NOT EXCEED  
THE IOWA STATE ACTION LEVEL OF  
.7 mg/l. THUS, NO PLUME MAP WAS  
CONSTRUCTED.

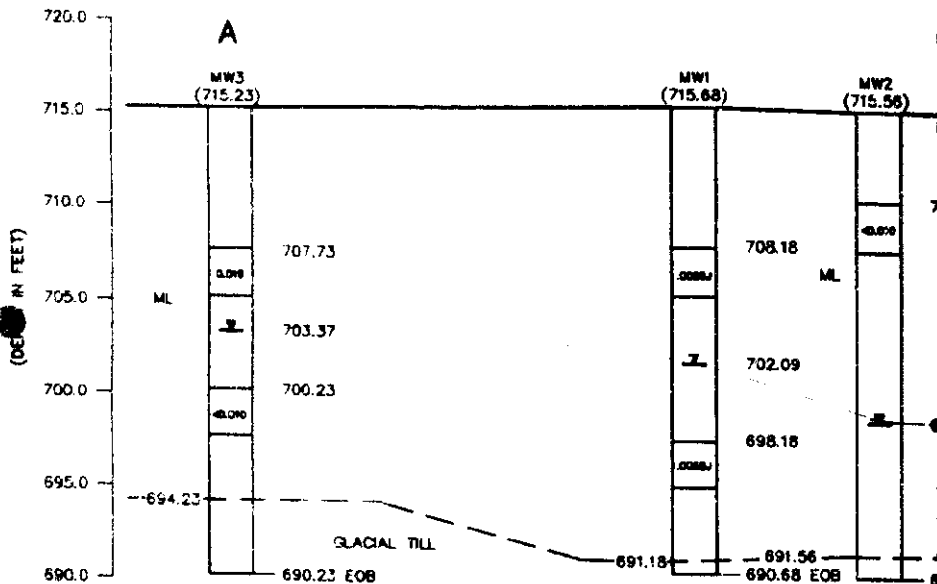
INSUFFICIENT DATA FOR CONTOURS

DATA COLLECTED ON 10/20/93

## XYLENE GROUNDWATER CONTAMINATION PLUME MAP

The Marley Pump Company  
500 E. 59th Street  
Davenport, Iowa

METCALF & EDDY



SE

0 15 30 60



HORIZONTAL

SCALE IN FEET

A'

MW4  
(715.11)

10.56

705.61

NO

98.97

698.95

▼

695.61 EOB

694.61

90.56 EOB

GLACIAL TILL

### LEGEND

CL = INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVEL, SANDS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS.

ML = INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS.



= GROUNDWATER ELEVATION DATA COLLECTED OCTOBER 20, 1993

0.00885

= SOIL CONTAMINANT LEVEL TPH IN ppm

— 695.61 EOB = ELEVATION END OF BORING

ELEVATIONS ARE BASED UPON MEAN SEA LEVEL

## HYDROGEOLOGICAL CROSS SECTION

The Marley Pump Company  
500 E. 59th Street  
Davenport, Iowa

HYDRAULIC CONDUCTIVITY - FIELD AND LABORATORY

SUMMARY OF EQUATIONS FOR DETERMINING HYDRAULIC CONDUCTIVITY, K:

$$K = \frac{R^2}{2L(T(2) - T(1))} \cdot \ln\left(\frac{L}{R}\right) \cdot \ln\left(\frac{H(T(1))/H(T(0))}{H(T(2))/H(T(0))}\right) \quad \text{EQUATION (1)}$$

WHERE:

- K = HYDRAULIC CONDUCTIVITY
- L = LENGTH OF WELL SCREEN
- R = RADIUS OF WELL
- T = TIME IN SECONDS FROM START OF TEST
- H = DIFFERENCE IN WATER HEAD BETWEEN WATER LEVEL AT TIME "T" AND THE STATIC WATER LEVEL

1) MONITORING WELL MW-1

$$K = \frac{(0.08)^2}{2 \cdot 12.18(12,600 - 3,600)} \cdot \ln\left(\frac{12.18}{0.08}\right) \cdot \ln\left(\frac{0.31}{0.06}\right) \quad \text{EQUATION (2)}$$

$$\begin{aligned} K &= 2.59 \times 10^{-7} \text{ ft/sec} \\ K &= 7.98 \times 10^{-6} \text{ cm/sec} \\ K &= 7.88 \times 10^{-4} \text{ m/sec} \\ T &= 2.86 \times 10^{-4} \text{ m}^2/\text{sec} \end{aligned} \quad \text{EQUATION (3)}$$

2) MONITORING WELL MW-2

$$K = \frac{(0.08)^2}{2 \cdot 7.18(9,000 - 3,600)} \cdot \ln\left(\frac{7.18}{0.08}\right) \cdot \ln\left(\frac{0.30}{0.14}\right) \quad \text{EQUATION (4)}$$

$$\begin{aligned} K &= 3 \times 10^{-7} \text{ ft/sec} \\ K &= 9.3 \times 10^{-6} \text{ cm/sec} \\ K &= 9.3 \times 10^{-4} \text{ m/sec} \\ T &= 2.2 \times 10^{-4} \text{ m}^2/\text{sec} \end{aligned} \quad \text{EQUATION (5)}$$

3) MONITORING WELL MW-3

$$K = \frac{(0.08)^2}{2 \cdot 11.6(9,000 - 4,800)} = \ln\left(\frac{11.6}{0.08}\right) + \ln\left(\frac{0.41}{0.29}\right) \quad \text{EQUATION (6)}$$

$$K = 2.6 \times 10^{-7} \text{ ft/sec}$$

$$K = 7.9 \times 10^{-4} \text{ cm/sec}$$

$$K = 7.9 \times 10^{-4} \text{ m/sec}$$

$$T = 7.33 \times 10^3 \text{ m}^2/\text{sec}$$

EQUATION (7)

McNeill & Eddy  
Hydraulic Conductivity

90257-01

Boring # MW-2  
Depth 25-28'

Description: CL Gray green silty sandy lean clay with trace organics

w 19%  
v<sub>s</sub> 111.1 pcf  
G<sub>s</sub> 2.68

Hydraulic Conductivity:  $1.5 \times 10^{-4}$  cm/sec  
② hydraulic gradient = 6

Tested in accordance with ASTM D 5084-90.

The data gathered for this sample was collected from a Shelby tube. The soil was collected from MW-2, below the silt strata.

C. If an equivalent method was used to determine conductivity, evaluate its accuracy.

D. Explain why the location/number of data points where hydraulic conductivity was determined adequately provides a representative indication of conductivity at the site.

Hydraulic conductivity tests were performed in each well (except MW-4) to illustrate the uniform magnitude across the site (all data was within one order of magnitude).

### VIII. Receptor Survey

#### >> Attach Appendix "VIII - Receptor Survey Map"

Provide a site area map that identifies the following:

A. Surface Water Body Survey. Location of surface water bodies (i.e. lakes, ponds, rivers, streams, etc.) within 6630 feet of the petroleum contaminated area. Include an evaluation of the potential for hydrogeological connections between the contamination and surface water. Justify the decision to conduct or not to conduct monitoring to determine the impact of contamination on surface water quality. Grab samples are typically collected to determine the impact of contamination on surface water quality. Samples taken upstream of the release can help establish the background levels for the compounds of concern. Subsequent samples taken downstream will provide information regarding contamination concentrations versus travel time. If surface water sampling is conducted, provide a diagram of the sampling methodology and evaluate the adequacy of the sampling program. Tabulate the analytical results. Also record visual observations (i.e. sheen, sludge, foam, etc.). Label the narrative and analytical results in Appendix VIII pertaining to the above with the heading "Surface Body Receptor Survey."

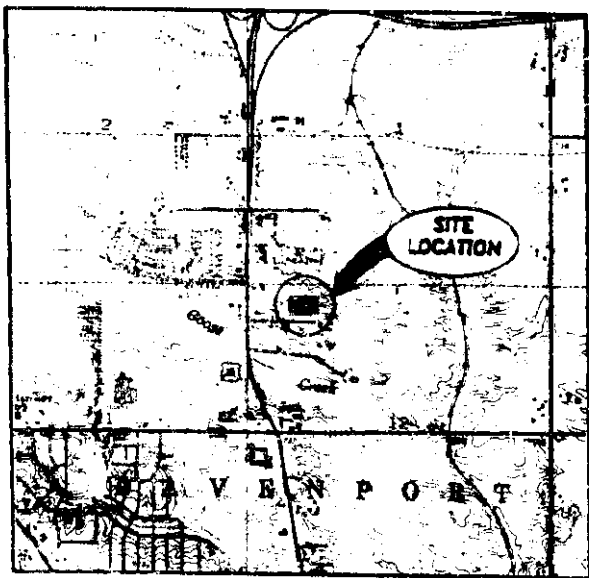
B. Conduit Survey. Location of utility (i.e., power lines, storm and sanitary sewers, tile lines, etc.), natural (i.e. sinkholes, caves, etc.) voids and confined spaces (i.e. basements, crawl spaces, etc.) within 200 feet of the area of petroleum contamination. Include a description of the investigation conducted to determine the potential for the conduits to act as pathways for vapors and product. The investigation must include soil sample collections for laboratory analysis and vapor monitoring. The focus of the investigation should be influenced by soil types, product type, phases and concentrations, location and depth of the utilities and confined spaces and groundwater elevations. In tabulation form, define the type of conduit or confined space, conduit backfill material, slope of conduit and trench, and relationship to groundwater levels. Tabulate the analytical results. Indicate if contamination has resulted in the presence of explosive vapors or caused physical damage to conduits or confined spaces. Label the narrative and analytical results in Appendix VIII pertaining to the above with the heading "Conduit Survey."

The following are recommended when conducting a vapor survey in an accessible utility conduit:

The vapor survey is required if there are reports of vapors or if the conduit has been impacted by the contamination or if there is the potential for vapors based on the type of substance release.

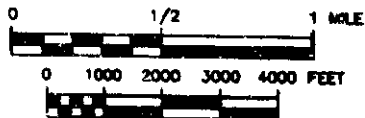
- 1) Use an explosimeter and photoionization detector (PID) to take vapor readings. Start at the manway closest to the site. Work upstream and downstream to determine if and where the product or vapors are entering, and the extent of the impacted area. "Crack" each manway cover and take readings of oxygen, explosimeter and PID. Repeat measurements at mid-depth and water level or bottom of the conduit.
- 2) Check air flow direction from the manway to determine if dilution of vapors is occurring.
- 3) Collect water or average samples. Observe for sheen and odors. If there is odor but no product, consider using the PID to obtain a head space analysis.
- 4) Check all incoming conduit branches. If odors are detected, continue the investigation upstream and downstream even if no product is present.
- 5) Check lift stations near the site.





SOURCE: U.S.G.S. DAVENPORT EAST, IOWA - ILL. (1975)

SCALE: 1:24000



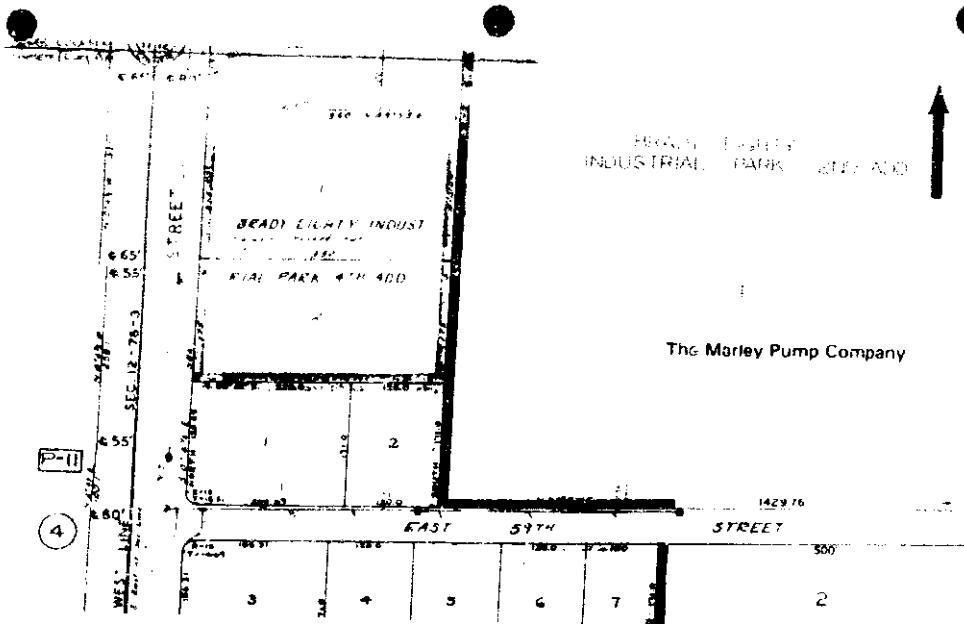
# RECEPTOR SURVEY MAP SURFACE WATER BODY SURVEY

The Marley Pump Company  
500 E. 59th Street  
Davenport, Iowa

METCALF & EDDY

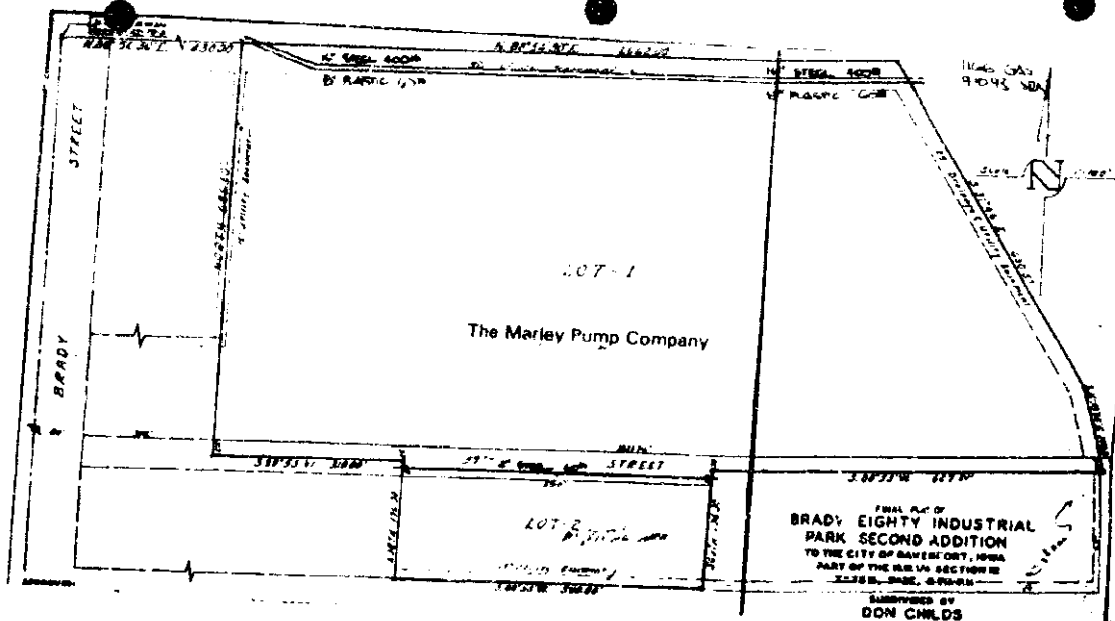


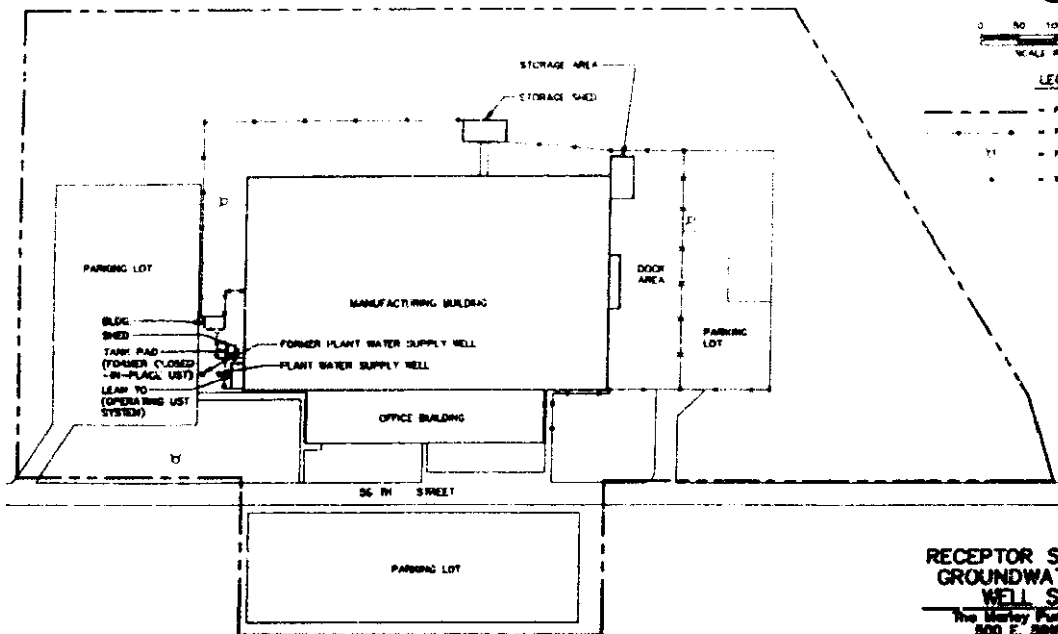




# **RECEPTOR SURVEY MAP CONDUIT SURVEY**

The Marley Pump Company  
500 E. 59th Street  
Davenport, Iowa  
(Sewer - Clay/Concrete Piping)





#### LEGEND

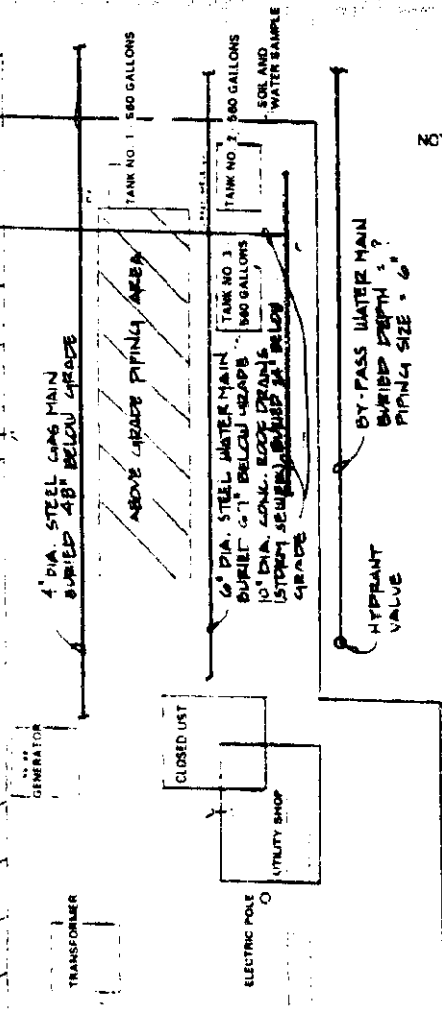
- PROPERTY LINE
- - - - - FENCE
- YH FIRE HYDRANT
- W WELL

### RECEPTOR SURVEY MAP GROUNDWATER WATER WELL SURVEY

The Henry Pump Company  
800 E. 58th Street  
Davenport, Iowa

REVISED 8/88

SW CORNER OF FACILITY



PLANT WATER SYSTEM  
 DRILLING AND PROCESS USE  
 T-1 APPROX. 200' DEEP

# RECEPTOR SURVEY MAP CONDUIT SURVEY

The Marley Pump Company  
 500 E. 50th Street  
 Davenport, Iowa

METCALF & EDDY



NOT TO SCALE

17th Electrical Supply

○ Former  
Well

○ Water  
Shut-off

Water  
Shut-off

Water  
Shut-off

Water  
Shut-off

Water  
Shut-off

Water  
Shut-off

9'12" S.W.  
6" x 2" V.C. 20' R.P.  
DRY WELL

Water  
Shut-off

R-270/115 304-1

348  
PUMP  
CONDUIT

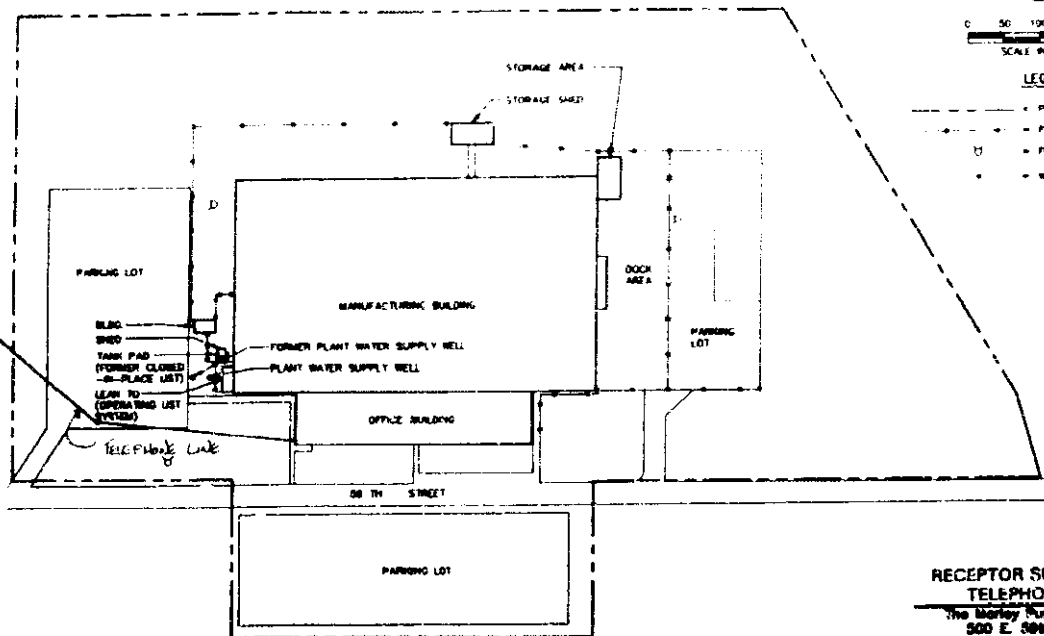
- ENG. LAB. -

# RECEPTOR SURVEY MAP CONDUIT SURVEY

The Marley Pump Company  
500 E. 59th Street  
Davenport, Iowa

METCALF & EDDY





LEGEND

- - - - - PROPERTY LINE
- — — — — FENCE
- FIRE HYDRANT
- WELL

RECEPTOR SURVEY MAP

TELEPHONE LINE

The Marley Pump Company  
500 E. 50th Street  
Des Moines, Iowa

## Receptor Survey

### Surface Water Body Survey

After evaluating the U.S.G.S. 7.5 minute quadrangle and conducting a site survey, surface water bodies such as streams, lakes, and/or ponds are not located within 1,000 feet of the designated petroleum impacted area. The closest surface water body, Goose Creek, is greater than 1,000 feet from the impacted area. Furthermore, at an average rate of  $K=2.61$  m/year, potentially impacted groundwater would take over 100 years to reach Goose Creek.

Given the distance of the surface water body from the impacted area and the hydraulic conductivity baildown tests conducted on all three monitoring wells (MW-1:  $7.88 \times 10^{-4}$  m/sec, MW-2:  $9.3 \times 10^{-4}$  m/sec, and MW-3:  $7.9 \times 10^{-4}$  m/sec), the impacted area is believed to be very localized. Therefore, it is not anticipated that any surface water body will be affected. Furthermore, it is not anticipated that any surface water body sampling will be conducted.

### Conduit Survey

Seneca Environmental Services (April 1992), had stated in their environmental report that a large metal pipe ran through the tank pit excavation from the water well located approximately 20-feet west of the site in the down-gradient direction. The pipe is approximately two-feet below the surface of the ground and is set directly in the clay soils, with no sand backfill around it. The pipe is situated at a level above the midline of the proposed tanks and the tank are double-walled construction. Seneca had indicated that it was not likely that this pipe will act as a conduit for any hydrocarbon migration if a leak occurred in one of the underground storage tanks. Please see the attached figure for further details.

A four-inch diameter steel natural gas main, buried five-feet below grade, runs north-south. The buried line is located east of the above ground piping area and the closed-in-place UST. The backfill for this buried pipeline is unknown. Please see the attached figure for further details.

A six-inch diameter cast iron water main, buried approximately 5 feet below grade, runs north-south. This buried line is located west of the steel gas main and directly south of the closed-in-place UST. The backfill for this line is unknown. Please see the attached figure for further details.

A ten-inch diameter concrete roof drain (storm sewer), buried two-feet below grade, runs north-south and east-west. The east-west extension of this line intersects the new underground storage facility between tanks 2 and 3. The backfill for this buried line is unknown. Please see the attached figure for further details.

A by-pass water main is located west of the closed-in-place UST and south of the new testing facility. The depth at which this line is buried is unknown. The expected diameter of this line is six-inches. The backfill for this buried line is unknown. Please see the attached figure for further details.

A storm sewer clean-out is located at the southwest corner of the testing area. A draining trough is located at the southern end of the testing area. The depth and construction of this trough is unknown.

347-1206

6

1

**The following are recommended when conducting a confined space survey:**

- 1) Check confined spaces using an explosionmeter and PID. Record name and address of building random/owners.
- 2) Check for vapors near basements, sewer drains and near any foundation cracks.

C. Groundwater Survey. Identifying active, inactive, abandoned and plugged groundwater wells within 1,000 feet of the petroleum contaminated area. Groundwater professionals only need to report well information readily available from public entities (i.e. county health or zoning departments, IDNR, Water Supply Section (315/242-6125), Geological Survey Bureau (319/335-1575) etc.) and water well owners. An owner survey will be necessary to identify all the wells in a 300 foot radius of the petroleum contaminated area. Include in the appendix:

- 1) Copies of available well logs.
- 2) Name and address of each well owner. Correlate with well number
- 3) Description of the plugging method for those wells not sealed according to chapter 567-39 IAC.

4) Complete the following Table

*"Photocopy if additional space is needed"*

| Well # as identified on Response Survey Map                             | Public Well                        | Private Well             | Est. Well                |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------------------------------------------|------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <b>Well Status</b>                                                      |                                    |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| Active                                                                  | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Inactive                                                                | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Abandoned                                                               | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Plugged                                                                 | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| According to Chapter 39                                                 | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Not according Chapter 39                                                | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Describe in the appendix the plugging process used for each well marked |                                    |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| <b>Well Use</b>                                                         | For Each Well, Mark All That Apply |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| Public Well                                                             | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Private Drinking Well                                                   | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Local Well                                                              | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Local Well Supply                                                       | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Static Water Level Elevation</b>                                     | NA                                 | NA                       | NA                       |                          |                          |                          |                          |                          |                          |                          |                          |
| <b>Well Depth Elevation</b>                                             | APPROX. 100'                       | APPROX. 100'             | APPROX. 100'             |                          |                          |                          |                          |                          |                          |                          |                          |
| <b>Well Diameter</b>                                                    | NA                                 | NA                       | 6"                       |                          |                          |                          |                          |                          |                          |                          |                          |
| <b>Casing Material</b>                                                  | Steel                              | Steel                    | Steel                    |                          |                          |                          |                          |                          |                          |                          |                          |
| <b>Well Log Provided</b>                                                |                                    |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| NO                                                                      | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| YES                                                                     | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Label the narrative and information in Appendix VIII pertaining to the above with the heading "Groundwater Well Survey."

D. Groundwater Barrier Survey. Identify the location of barriers, (i.e. foundations, structures, parking lots, roads, natural, etc.) that could have an impact on the movement of the contamination. Explain the significance of the barriers by relating their proximity to the hydrogeological conditions at the site. Label the narrative in Appendix VIII pertaining to the above information with the heading "Groundwater Barrier Survey."

**IX. Certification of Site Health & Safety**

**REQUIRED**

**Statement of Verification of On-Site Health & Safety Procedures**

The On-Site Health & Safety Procedures and Conditions conform with applicable OSHA requirements.

**Yes [ ] No [ ]**

### Groundwater Well Survey

Three deep wells exist on-site: former plant water supply well, plant water supply well, and a former test well. Please refer to the "Overall Site Plan Map" for further details.

- Former plant water supply well - Well logs are not available for this water supply well. This well used to supply water to the plant for its operations. However, it is currently not in service. This well is not plugged. The depth of this well is approximately 240 feet below grade. This well is located approximately 20 feet west of the testing facility lean-to.
- Water supply well - Well logs are not available for this water supply well. This well currently supplies water to the plant for all purposes: industrial and drinking. The depth of this well is approximately 240 feet below grade. This well is located approximately 5-feet west from the testing facility lean-to.
- Test well - A 6-inch diameter, 200-foot deep test well was drilled on the facility property in 1979. The well was used to test Marley Pump Company's jet pumps. This well is located in the testing facility.

The owner of all three wells is the Marley Pump Company located at 500 East 59th Street, Davenport, Iowa.

There are no off-site wells within 1,000 feet of the UST.

### Groundwater Barriers Survey

One of Marley Pump Company's parking lots for this facility is located approximately 40-feet west of the testing facility lean-to. Additional parking lots are located on the other side of the facility, approximately 650-feet east of the testing facility lean-to and approximately 180-feet south of the testing facility lean-to. The building foundation for this facility is approximately 3.5 feet below grade. This does not pose a barrier for groundwater because groundwater, as measured in the four groundwater monitoring wells, ranges from approximately 11 feet to 18 feet below grade. East 59th street is located south and approximately 130-feet south of the testing facility lean-to.

# X. Tabulation of Analytical Data

Photocopy this form if additional space is needed.

## Soil Analytical Data Information

Provide a tabulation of analytical data for each soil boring or monitoring well. List each sampling event chronologically with the latest date first. If borings were sampled on a particular day at different elevations, list the results for the samples closest to the ground surface first. Record all elevations as feet Above Sea Level (ASL).

| Boring/Well Number                 | MW-1    | MW-1    | MW-2    | MW-3    | MW-3    | MW-4    | B-1     | B-2     | B-3     |
|------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Date Sampled                       | 11/1/12 | 11/1/12 | 11/1/12 | 11/1/12 | 11/1/12 | 11/1/12 | 11/1/12 | 11/1/12 | 11/1/12 |
| Elevation (ft ASL)                 |         |         |         |         |         |         |         |         |         |
| Ground Surface                     | 715.62  | 715.62  | 715.52  | 715.23  | 715.23  | 715.11  | 715.02  | 715.62  | 715.42  |
| Soil Sample                        | 715.12  | 715.12  | 715.12  | 715.12  | 715.12  | 715.12  | 715.12  | 715.12  | 715.12  |
| Static Groundwater (11/1/12)       | 715.12  | 715.12  | 715.12  | 715.12  | 715.12  | 715.12  | 715.12  | 715.12  | 715.12  |
| Total Petroleum Hydrocarbons (ppm) | ND      | ND      | ND      | ND      | ND      | ND      | ND      | ND      | ND      |
| Extractable Hydrocarbons (ppm)     | ND      | ND      | ND      | ND      | ND      | ND      | ND      | ND      | ND      |

See attached to file 10/1/12

## Groundwater Analytical Data Information (10/1/12)

Provide a tabulation of groundwater sampling analytical data. List the sampling events starting with the first well in the well identification scheme. If the well was sampled more than once, list each result chronologically. Record all elevations as feet Above Sea Level (ASL).

| Boring/Well Number | MW-1    | MW-2    | MW-3    | MW-4    | MW-4    |  |  |  |  |
|--------------------|---------|---------|---------|---------|---------|--|--|--|--|
| Date               | 11/1/12 | 11/1/12 | 11/1/12 | 11/1/12 | 11/1/12 |  |  |  |  |
| Elevation (ft ASL) |         |         |         |         |         |  |  |  |  |
| Ground Elevation   | 715.62  | 715.52  | 715.23  | 715.11  | 715.11  |  |  |  |  |
| Top of Screen      | 715.62  | 715.52  | 715.23  | 715.11  | 715.11  |  |  |  |  |
| Static Water Level | 715.62  | 715.52  | 715.23  | 715.11  | 715.11  |  |  |  |  |
| Benzene (ppb)      | ND      | ND      | ND      | ND      | ND      |  |  |  |  |
| Ethylbenzene (ppb) | ND      | ND      | ND      | ND      | ND      |  |  |  |  |
| Toluene (ppb)      | ND      | ND      | ND      | ND      | ND      |  |  |  |  |
| Xylene (ppb)       | ND      | ND      | ND      | ND      | ND      |  |  |  |  |

>> Attach Appendix X "Laboratory Data Sheets"

Provide copies of all laboratory data sheets.

## XI. Free Product

CONFINE YOUR ANSWER TO THE SPACE PROVIDED.

- Is free product present at the site? YES ☐ NO ☐ **NOM**
- If yes, indicate to date the "Free Product Removal Report" was submitted:
- Discuss the cause and evaluate the effectiveness of the free product removal system in relation to the hydrogeological conditions at the site.
- Provide monthly reports to DNR on the attached DNR forms 542-1424 and 542-1425.

APPENDIX X - LABORATORY DATA SHEETS

SOIL ANALYTICAL DATA - METCALF & EDDY, INC.

|                   |                      |
|-------------------|----------------------|
| MW-1, 7.5' - 10'  | TPH - 8.8 J<br>UG/KG |
| MW-1, 17.5' - 20' | TPH - 6.8 J<br>UG/KG |
| MW-2, 5' - 7.5'   | TPH - ND             |
| MW-3, 7.5' - 10'  | TPH - 16.6<br>UG/KG  |
| MW-3, 15' - 17.5' | TPH - ND             |
| MW-3, 15' - 17.5' | TPH - ND             |

(SAMPLES COLLECTED ON 9/18/93)

SOIL ANALYTICAL DATA - METCALF & EDDY, INC.

|                                     |                                     |                                          |                                     |                                 |
|-------------------------------------|-------------------------------------|------------------------------------------|-------------------------------------|---------------------------------|
| B-1, 4'-6',<br>Benzene - ND         | B-1, 4'-6',<br>Toluene - ND         | B-1, 4'-6',<br>Ethylbenzene - ND         | B-1, 4'-6',<br>Xylenes - ND         | B-1, 4'-6',<br>TPH - 13.8 ug/kg |
| B-2, 6' - 8',<br>Benzene - ND       | B-2, 6' - 8',<br>Toluene - ND       | B-2, 6' - 8',<br>Ethylbenzene - ND       | B-2, 6' - 8',<br>Xylenes - ND       | B-2, 6' - 8',<br>TPH - ND       |
| B-3, 4'-6',<br>Benzene - ND         | B-3, 6' - 8',<br>Toluene - 9.6J     | B-3, 6' - 8',<br>Ethylbenzene - ND       | B-3, 6' - 8',<br>Xylenes - ND       | B-3, 6' - 8',<br>TPH - 13 ug/kg |
| MW-4, 9.5' - 11.5',<br>Benzene - ND | MW-4, 9.5' - 11.5',<br>Toluene - ND | MW-4, 9.5' - 11.5',<br>Ethylbenzene - ND | MW-4, 9.5' - 11.5',<br>Xylenes - ND | MW-4, 9.5' - 11.5',<br>TPH - ND |

(SAMPLES COLLECTED ON OCTOBER 19, 1993)

SOIL ANALYTICAL DATA - SENECA ENVIRONMENTAL SERVICES

|                              |                                   |                              |                              |                         |
|------------------------------|-----------------------------------|------------------------------|------------------------------|-------------------------|
| BH-1, BENZENE -<br><0.5 UG/G | BH-1, ETHYLBENZENE -<br><0.5 UG/G | BH-1, TOLUENE -<br><0.5 UG/G | BH-1, XYLENES -<br><0.5 UG/G | BH-1, TPH - <10<br>UG/G |
|------------------------------|-----------------------------------|------------------------------|------------------------------|-------------------------|

(SAMPLES COLLECTED ON 3/1/92)



WATER ANALYTICAL DATA - METCALF & EDDY, INC.

|                                  |                                  |                               |                                     |                           |
|----------------------------------|----------------------------------|-------------------------------|-------------------------------------|---------------------------|
| MW-1, BENZENE -<br>ND UG/L       | MW-1, ETHYLBENZENE -<br>ND UG/L  | MW-1, TOLUENE -<br>ND UG/L    | MW-1, XYLENES -<br>ND UG/L          | MW-1, TPH - 16.5<br>UG/L  |
| MW-2, BENZENE -<br>748 UG/L      | MW-2, ETHYLBENZENE -<br>322 UG/L | MW-2, TOLUENE -<br>42.8 UG/L  | MW-2, XYLENES -<br>43.6 UG/L        | MW-2, TPH - 2540<br>UG/L  |
| MW-3, BENZENE -<br>ND UG/L       | MW-3, ETHYLBENZENE -<br>ND UG/L  | MW-3, TOLUENE -<br>12.2 UG/L  | MW-3, XYLENES -<br>2.8 J UG/L       | MW-3, TPH - ND<br>UG/L    |
| MW-3D, BENZENE -<br>ND UG/L      | MW-3, ETHYLBENZENE -<br>ND UG/L  | MW-3D, TOLUENE -<br>25.1 UG/L | MW-3D, XYLENES -<br>ND UG/L         | MW-3, TPH - ND<br>UG/L    |
| RINSATE,<br>BENZENE - ND<br>UG/L | RINSATE, ETHYLBENZE<br>- ND UG/L | RINSATE, TOLUENE<br>- ND UG/L | RINSATE,<br>XYLENES - 0.5 J<br>UG/L | RINSATE, TPH -<br>ND UG/L |

SAMPLES COLLECTED ON 10/1/92

WATER ANALYTICAL DATA - METCALF & EDDY, INC.

|                             |                                   |                              |                              |                         |
|-----------------------------|-----------------------------------|------------------------------|------------------------------|-------------------------|
| MW-1, BENZENE -<br>ND UG/L  | MW-1, ETHYLBENZENE -<br>ND UG/L   | MW-1, TOLUENE -<br>8.6J UG/L | MW-1, XYLENES -<br>8.6J UG/L | MW-1, TPH - ND<br>UG/L  |
| MW-2, BENZENE -<br>168 UG/L | MW-2, ETHYLBENZENE -<br>3.6J UG/L | MW-2, TOLUENE -<br>21.8 UG/L | MW-2, XYLENES -<br>178 UG/L  | MW-2, TPH - 998<br>UG/L |
| MW-3, BENZENE -<br>7.9 UG/L | MW-3, ETHYLBENZENE -<br>2.9 UG/L  | MW-3, TOLUENE -<br>25.6 UG/L | MW-3, XYLENES -<br>6.1 UG/L  | MW-3, TPH - 177<br>UG/L |
| MW-4, BENZENE -<br>ND UG/L  | MW-4, ETHYLBENZE<br>- ND UG/L     | MW-4, TOLUENE -<br>ND UG/L   | MW-4, XYLENES -<br>ND UG/L   | MW-4, TPH - ND<br>UG/L  |
| MW-4D, BENZENE -<br>ND UG/L | MW-4D, ETHYLBENZE -<br>ND UG/L    | MW-4D, TOLUENE -<br>ND UG/L  | MW-4D, XYLENES<br>- ND       | MW-4D, TPH -<br>ND      |

SAMPLES COLLECTED ON OCTOBER 28, 1993

WATER ANALYTICAL DATA - SENECA ENVIRONMENTAL SERVICES

|                              |                                   |                              |                              |                         |
|------------------------------|-----------------------------------|------------------------------|------------------------------|-------------------------|
| BH-1, BENZENE -<br>0.61 MG/L | BH-1, ETHYLBENZENE -<br>0.25 MG/L | BH-1, TOLUENE - 0.29<br>MG/L | BH-1, XYLENES - 0.15<br>MG/L | BH-1, TPH - 3.7<br>MG/L |
|------------------------------|-----------------------------------|------------------------------|------------------------------|-------------------------|

**SENECA ENVIRONMENTAL SERVICES, INC.**  
**SOIL AND GROUNDWATER LABORATORY ANALYTICAL DATA**

**NET****NATIONAL  
ENVIRONMENTAL  
TESTING, INC.**NET Midwest, Inc.  
Cedar Falls Division  
704 Enterprise Drive  
P.O. Box 625  
Cedar Falls, IA 50613  
Tel. (319) 277-2401  
Fax (319) 277-2425**ANALYTICAL REPORT**Ms. Heather Morton-Davis  
SENECA ENVIRONMENTAL SERV.  
5113 Tremont Avenue  
Davenport, IA 52807

03/30/1992

Sample No.: 163005  
Job Number: 92.2095Sample Description: S-7 BH-1 Marley Pump  
SOIL

Date Taken: 03/18/1992

Date Received: 03/19/1992

| Parameter                      | Result | Units | Date Analyzed/Analyst |
|--------------------------------|--------|-------|-----------------------|
| Total Extractable Hydrocarbons | <10.   | ug/g  | 03/27/1992 hlk        |
| VOLATILES - BTEX (NONAQUEOUS)  |        |       |                       |
| Benzene                        | <0.5   | ug/g  | 03/24/1992 mkk        |
| Ethylbenzene                   | <0.5   | ug/g  | 03/24/1992 mkk        |
| Toluene                        | <0.5   | ug/g  | 03/24/1992 mkk        |
| Xylenes, Total                 | <0.5   | ug/g  | 03/24/1992 mkk        |
| Total Hydrocarbons             | <10.   | ug/g  | 03/24/1992 mkk        |

Sample introduction performed in reference to EPA Method 5030 (purge & trap). Analysis performed in reference to EPA Method 8015 for volatile organics using flame ionization detection. (Iowa Method OA-1, Revision 7/01/91).

Method Detection Limits: Benzene <0.5 ug/g; Toluene <0.5 ug/g;  
Xylenes, Total <0.5 ug/g; Total Hydrocarbons <10. ug/g;  
Ethyl Benzene <0.5 ug/g.

Extractable Hydrocarbons are extracted in accordance with EPA Method 3550 (sonication extraction). Analysis is performed in reference to EPA Method 8100 using flame ionization detection. (Iowa Method OA-2, Revision 7/01/91). Method Detection Limit <10. ug/g

  
R. L. Bindert  
Project Manager**received**  
4/1/92

**NET****NATIONAL  
ENVIRONMENTAL  
TESTING, INC.**NET Midwest, Inc.  
Cedar Falls Division  
704 Enterprise Drive  
P.O. Box 625  
Cedar Falls, IA 50613  
Tel. (319) 277-2401  
Fax. (319) 277-2426**ANALYTICAL REPORT**Ms. Heather Morton-Davis  
SENECA ENVIRONMENTAL SERV.  
5113 Tremont Avenue  
Davenport, IA 52807

03/30/1992

Sample No.: 163006  
Job Number: 92.2095Sample Description: W-BH1  
WATER

Harley Pump

Date Taken: 03/18/1992

Date Received: 03/19/1992

|                                 | <u>Result</u> | <u>Units</u> | <u>Date Analyzed/Analyst</u> |
|---------------------------------|---------------|--------------|------------------------------|
| <b>VOLATILES - BTEX (WATER)</b> |               |              |                              |
| Benzene                         | 0.61          | mg/L         | 03/20/1992 ake               |
| Ethylbenzene                    | 0.25          | mg/L         | 03/20/1992 ake               |
| Toluene                         | 0.29          | mg/L         | 03/20/1992 ake               |
| Xylenes, Total                  | 0.25          | mg/L         | 03/20/1992 ake               |
| Total Hydrocarbons              | 3.7           | mg/L         | 03/20/1992 ake               |

Sample introduction performed in reference to EPA Method 5030 (purge and trap). Analysis performed in reference to EPA Method 8015 for volatile organics using flame ionization detection. (Iowa Method CA-1, Revision 7/01/91).

Method Detection Limits: Benzene <0.002 mg/L; Toluene <0.002 mg/L;  
Xylenes, Total <0.002 mg/L; Ethyl Benzene <0.002 mg/L  
Total Hydrocarbons <3.10 mg/L.

  
R. L. Bindert  
Project Manager

**METCALF & EDDY, INC**  
**SOIL AND GROUNDWATER LABORATORY ANALYTICAL DATA**  
**ROUND 1 - SEPTEMBER/OCTOBER 1992**

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2838 • FAX 918-251-2599

TEST NO. 11076  
CLIENT: FLORENCE J. WEST  
TEST: ALCALINITY  
NAME: DENNIS J. WEST

REPORT: 11076.0111

DATE: 09-25-92

| PARAMETER | DET.<br>LIMIT | UNIT | RESULTS |
|-----------|---------------|------|---------|
|-----------|---------------|------|---------|

## JA/OC SURROGATE RECOVERY

NOTE: The following results are based on the assumption that the sample is a surrogate recovery sample. If the sample is a real sample, the results may be different. The results are based on the assumption that the sample is a surrogate recovery sample. The results are based on the assumption that the sample is a surrogate recovery sample.

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: M. J. & J. D. J.  
10101 S. W. 1000 WEST  
10101 S. W. 1000 WEST  
10101 S. W. 1000 WEST

REPORT: 11078.0211

DATE: 09-25-92

| PARAMETER | DET. | UNIT | RESULTS |
|-----------|------|------|---------|
|-----------|------|------|---------|

PAVIL SUPPLEMENTARY RECOVERY

RECEIVED BY: [illegible]

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2590

CLIENT: MICHAEL E. BERRY  
10140 E. LAZA, BOX 10 1500 WEST  
TULSA, OK 74114  
ATTN: DENNIS STONE

REPORT: 1107B.0311

DATE: 09-25-92

| PARAMETER | DET. | UNIT | RESULTS |
|-----------|------|------|---------|
|-----------|------|------|---------|

QA/QC SURROGATE RECOVERY

10140 E. LAZA, BOX 10 1500 WEST  
TULSA, OK 74114  
ATTN: DENNIS STONE



**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2390

CLIENT: TETRA 4 EDDY  
INTERVIEW AREA, STATE COR. WKS  
INSTR: JCL 50147  
ATTN: DENNIS STAFF

REPORT: 11078.0411

DATE: 09-25-92

| PARAMETER | DET. | UNIT | RESULTS |
|-----------|------|------|---------|
|-----------|------|------|---------|

QA/QC SURROGATE RECOVERY

RECOVERED TO 100% WITHIN 10% OF HARD IONIZATION  
RECOVERED TO 100% WITHIN 10% OF HARD IONIZATION

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: M. J. A. B. B. I.  
PROJECT: 1107B.05T1  
THROW: 100-1147  
DATE: 09-25-92

REPORT: 1107B.05T1

DATE: 09-25-92

| PARAMETER | DET.<br>LIMIT | UNIT | RESULTS |
|-----------|---------------|------|---------|
|-----------|---------------|------|---------|

## QA/QC SURROGATE RECOVERY

MECHANICAL ANALYSIS OF THE SURROGATE RECOVERY DATA FOR THE 1107B.05T1 PROJECT. THE SURROGATE RECOVERY DATA IS PRESENTED IN THE FOLLOWING TABLE. THE SURROGATE RECOVERY DATA IS PRESENTED IN THE FOLLOWING TABLE.

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1710 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EIDY  
REFERENCE: KCH2AL SITE NO. 002 WEST  
ANALYST: DENNIE L. STUBBS

REPORT: 11078.0611

DATE: 09-15-92

| PARAMETER | DET.<br>LIMIT | UNIT | RESULTS |
|-----------|---------------|------|---------|
|-----------|---------------|------|---------|

## QA/QC SURROGATE RECOVERY

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Suite "C" • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX-918-341-5600

## LABORATORY QUALITY CONTROL SEQUENCE

METHOD : SW846-8015 (MODIFIED) (IOWA METHOD)  
SEQUENCE DATE : 09/22/92  
INSTRUMENT ID. : 6

## LABORATORY BLANK

|                          |                             |
|--------------------------|-----------------------------|
| MATRIX : Water           | ANALYST NO. : BLANK         |
| SAMPLE ID. : BLANK       | FILENAME : 6092292\011F1101 |
| SAMPLE AMOUNT : 5.0 ml   | DILUTION FACTOR: 1          |
| ANALYSIS DATE : 09/22/92 |                             |
| ANALYSIS TIME : 09:28    |                             |

| COMPOUND | QUANTITATION<br>LIMIT (ug/L) | AMOUNT FOUND<br>(ug/L) |
|----------|------------------------------|------------------------|
| <hr/>    |                              |                        |
| GASOLINE | 10.0                         | 10.0 ND                |

SURROGATE RECOVERY (4-BROMOFLUOROBENZENE) : 101 %

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

| COMPOUND | SPIKE CONC.<br>(ug/Kg) | 5819.04<br>SAMPLE CONC.<br>(ug/Kg) * | 5819.04MS<br>MATRIX SPIKE<br>CONC. (ug/Kg) * | PERCENT<br>RECOVERY |
|----------|------------------------|--------------------------------------|----------------------------------------------|---------------------|
| <hr/>    |                        |                                      |                                              |                     |
| GASOLINE | 500.0                  | 16.6                                 | 479.1                                        | 92.5 %              |

|                                        |                                |
|----------------------------------------|--------------------------------|
| 5819.04ND<br>MATRIX SPIKE<br>DUPLICATE | PERCENT<br>RECOVERY            |
| CONC. (ug/Kg) * RECOVERY               | RECOVERY PERCENT<br>DIFFERENCE |

|          |       |        |          |
|----------|-------|--------|----------|
| GASOLINE | 487.2 | 94.1 % | ( 1.7) % |
|----------|-------|--------|----------|

\* DILUTION FACTORS NOT APPLIED TO THESE CONCENTRATIONS

5819.04 IS CLIENT SAMPLE NO:MM-0 7.5-10

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: MICHAEL & BERT  
1 ELMER BLVD., SUITE 100, WEST  
TULSA, OKLA. 74103  
ATTN: DENISE STOK

REPORT: 11239.01BX

DATE: 10-21-92

SAMPLE MATRIX: WATER  
MW: 11239.01  
METHOD REFERENCE: SWD46-6000  
CALCULATION FACTOR: 1  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-16-92  
SUBJECT: TABLET COMPANY  
SAMPLE NO: 19W1

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULTS |
|---------------------------|-----------------|------|---------|
| <u>GAS CHROMATOGRAPHY</u> |                 |      |         |
| BENZENE                   | 1.0             | ug/L | ND      |
| TOLUENE                   | 1.0             | ug/L | ND      |
| ETHYLBENZENE              | 1.0             | ug/L | ND      |
| XYLENE                    | 1.0             | ug/L | ND      |

QA SEQUENCE NO: 38240

## QA/QC SURROGATE RECOVERIES

4-BROMOPHTHOLOXENONE (65-135%) 102%

D = ESTIMATED VALUE ABOVE LINEAR RANGE;  
ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
P = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
E = ESTIMATED VALUE; CONCENTRATION BELOW LIMIT OF QUANTITATION  
\* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.  
SM = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION 89/6046, THIRD  
EDITION, NOVEMBER 1986

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: PETROLEUM & CO.  
10000 PLAZA, SUITE 1000 WEST  
DALLAS, TEX. 75240  
ATTN: DENISE WIDBY

REPORT: 11039.0111

DATE: 10-21-92

SAMPLE MATRIX: WATER  
LAB # 11039.01  
METHOD REFERENCE: 1631  
DILUTION FACTOR: 1  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-14-92  
DATE ANALYZED: 10-21-92  
PROJECT: MARLEY & PHIL COMPANY  
SAMPLE ID: 10W

| PARAMETER                                      | QUANT.<br>LIMIT | UNIT | RESULTS |
|------------------------------------------------|-----------------|------|---------|
| <u>TOTAL MEASURABLE PETROLEUM HYDROCARBONS</u> |                 |      |         |
| GASOLINE                                       | 10.0            | ug/L | 18.5    |

## QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 95%

- \* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.
- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
- E = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE
- J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- ! = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Alameda • Broken Arrow, Oklahoma 74012 • 918-251-2856 • FAX 918-251-2599

CLIENT: TETRA TECH  
 INTERFERENCE: 1179 1179 WEST  
 STANDARD: 1179 1179 WEST  
 ATTN: DENISE STOKER

REPORT: 11029.026X

DATE: 10-21-92

SAMPLE MATERIAL: WATER  
 ANALYST: J. J. JONES  
 METHOD REFERENCE: 80047-1010  
 DILUTION FACTOR: 10  
 DATE SAMPLED: 10-11-92  
 DATE SUBMITTED: 10-11-92  
 DATE ANALYZED: 10-11-92  
 PROJECT: MAPLE FOUNTAIN COMPANY  
 ANALYST: J. J. JONES

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULTS |
|---------------------------|-----------------|------|---------|
| <u>GAS CHROMATOGRAPHY</u> |                 |      |         |
| BENZENE                   | 50.0            | ug/L | 748     |
| TOLUENE                   | 50.0            | ug/L | 42.0    |
| ETHYLBENZENE              | 50.0            | ug/L | 322     |
| XYLENES                   | 50.0            | ug/L | 83.6    |

## GA SEQUENCE NO: 38241 GA/RG SURROGATE RECOVERIES

4-BROMOPHENOLBENZENE 67-105% 106%

- E = ESTIMATED VALUE (ABOVE LINEAR RANGE)
- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
- H = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE
- F = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- S = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.
- SM = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION 846046, THIRD EDITION, NOVEMBER 1986

# **SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1701 W. Adams • Broken Arrow, Oklahoma 74012 • 918-251-2854 • FAX 918-251-2599

CLIENT: MEDICAL ABBEY  
11000 E. FLAZA, SUITE 1100 WEST  
TULSA, OKLA. 74116  
ATTN: DENISE STOKS

REPORT: 11239.0011

DATE: 10-21-92

SAMPLE MATRIX: WATER  
CALL # 11239.00  
METHOD REFERENCE: EPA-  
DILUTION FACTOR: 10  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-02-92  
ANALYST: MARLEY FUMI COMPANY  
SAMPLE ID: 11239.00

| PARAMETER                                   | QUANT.<br>LIMIT | UNIT | RESULTS |
|---------------------------------------------|-----------------|------|---------|
| <u>TOTAL SOLUBLE PETROLEUM HYDROCARBONS</u> |                 |      |         |
| ASPHALTEN                                   | 1.00.0          | ug/l | 2540.0  |

## QA/QC SURROGATE RECOVERY

4-PHENYLFLUORENENE 97%

- # SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.
- ND = NOT DETECTED ABOVE QUANTIFICATION LIMIT
- B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE
- Q = ESTIMATED VALUE; CONCENTRATION BELOW LIMIT OF QUANTIFICATION
- I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE



# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

(700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2558 • FAX: 918-251-2599

CLIENT: DETROIT & SONS

TESTER: J. R. HARRIS, JR. (DTE 1000 WEST

17TH AVE. S.W., TULSA, OK 74104

ATTN: JENNIFER HARRIS

REPORT: 11239.03BX

DATE: 10-21-92

SAMPLE MATRIX: WATER

ANALYST: J. R. HARRIS, JR.

METHOD REFERENCE: MSWB46-1001

DILUTION FACTOR:

DATE SAMPLED: 10-14-92

DATE SUBMITTED: 10-14-92

DATE ANALYZED: 10-28-92

PROJECT: MARLEY'S HOME COMFORT

SAMPLE ID: MW-1

| PARAMETER                  | QUANT. |      | RESULTS |
|----------------------------|--------|------|---------|
|                            | LIMIT  | UNIT |         |
| <u>BAS. CRETAC. GRAPH.</u> |        |      |         |
| BENZENE                    | 5.0    | ug/L | ND      |
| TOLUENE                    | 5.0    | ug/L | 22.2    |
| ETHYLENEGLYCOL             | 5.0    | ug/L | ND      |
| XYLENES                    | 5.0    | ug/L | 0.0     |

## QA SEQUENCE NO: 38242 QA/QC SURROGATE RECOVERIES

4-BROMOFLUOROPHENYLENE (65-105%) 110%

- E = ESTIMATED VALUE (ABOVE LINEAR RANGE)
- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
- B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE
- 1 = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- 2 = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.
- SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION MSWB46, THIRD EDITION, NOVEMBER 1986

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCAL & EDDY  
1 PIERCE PLAZA, SUITE 1000 WEST  
CHASCA, ILL. 60010  
ATTN: DENISE STOR

REPORT: 11209.0011

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SOLL # 11209.001  
METHOD REFERENCE: 164-1  
DILUTION FACTOR: 1  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-15-92  
PROJECT: MAPLE FURN COMPANY  
SAMPLE ID: MW-

| PARAMETER                                     | QUANT.<br>LIMIT | UNIT | RESULTS |
|-----------------------------------------------|-----------------|------|---------|
| <u>TOTAL FUEL OIL, PETROLEUM HYDROCARBONS</u> |                 |      |         |
| GASOLINE                                      | 10.0            | ug/L | ND      |

NOTE: THE ELUTION PATTERN OF THIS SAMPLE IS NOT CONSISTANT WITH GASOLINE

## PAH/PC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 95%

- # = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.
- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
- S = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE
- U = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2658 • FAX: 918-251-2509

LOCATION: PETROLEUM FIELD  
SITE: LEASE PLAZA, STATE 1500 WEST  
TASALA, OKLA. 74015  
ATTN: DENISE BROWN

REPORT: 11239.04BX

DATE: 10-21-92

SAMPLE MATRIX: WATER  
ANALYST: 11239.04  
METHOD REFERENCE: SW646-8020  
DILUTION FACTOR:  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-06-92  
PROJECT: WATER FROM OILFIELD  
ANALYST: RW-10

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULTS |
|---------------------------|-----------------|------|---------|
| <u>GAS CHROMATOGRAPHY</u> |                 |      |         |
| BENZENE                   | 1.0             | ug/L | ND      |
| TOLUENE                   | 1.0             | ug/L | 20.1    |
| ETHYLBENZENE              | 1.0             | ug/L | ND      |
| XYLENE                    | 1.0             | ug/L | ND      |

## QA SEQUENCE NO: 38242 QA/QC SURROGATE RECOVERIES

4-BROMOPHTHOLOPHENONE (65-1055) 1232

- E = ESTIMATED VALUE (ABOVE LINEAR RANGE)
- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
- B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE
- T = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- \* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RE-RUN.
- SW = TEST METHODS FOR EVALUATING SOLID WASTE. EPA PUBLICATION 8460/8-86, THIRD EDITION, NOVEMBER 1986

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

700 W. Adams • Broken Arrow, Oklahoma 74012 • TEL: 918/251-2456 • FAX: 918/251-2599

EVEN: 7512614 ETT  
10000 PLAZA, SUITE 1000 WEST  
TULSA, OKLA. 74147  
ATTN: DENISE STOKY

REPORT: 11239.04YI

DATE: 10-21-92

SAMPLE MATRIX: WATER  
CXL: M-10009.0A  
METHODS REFERENCE: 8441  
COLLECTION FACILITY: 1  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-12-92  
DATE ANALYZED: 10-13-92  
ANALYST: MARLEY HARRIS COMPANY  
SAMPLE ID: MW-02

| PARAMETER                                       | QUANT.<br>LIMIT | UNIT | RESULTS |
|-------------------------------------------------|-----------------|------|---------|
| <u>TOTAL RECOVERABLE PETROLEUM HYDROCARBONS</u> |                 |      |         |
| GASOLINE                                        | 10.0            | mg/L | ND      |

NOTE: THE ELUTION PATTERN OF THIS SAMPLE IS NOT CONSISTENT WITH GASOLINE

## QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 106%

- \* - SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.
- ND - NOT DETECTED ABOVE QUANTITATION LIMIT
- B - COMPOUND FOUND IN BLANK AS WELL AS SAMPLE
- J - ESTIMATED VALUE; CONCENTRATION BELOW LIMIT OF QUANTITATION
- I - UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

2700 W. Highway 40 • Broken Arrow, Oklahoma 74012 • 918-251-2658 • FAX 918-251-2100

CLIENT: METCAL & ELLI  
PIERCE FISHAW, 1010 WEST  
STAGLAL, M.L. 80047  
ATTN: DENISE STORP

REPORT: 11239.05BX

DATE: 10-21-92

SAMPLE MATERIAL: WATER  
INSTR. # 11239.00  
METHOD REFERENCE: 154846-9010  
DILUTION FACTOR: 10  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-10-92  
DATE ANALYZED: 10-06-92  
ANALYST: MARLENE HOFMEIER  
SAMPLE ID: 410404E

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULTS |
|---------------------------|-----------------|------|---------|
| <u>GAS CHROMATOGRAPHY</u> |                 |      |         |
| BENZENE                   | 1.0             | ug/L | ND      |
| TOLUENE                   | 1.0             | ug/L | ND      |
| ETHYLBENZENE              | 1.0             | ug/L | ND      |
| XYLENES                   | 1.0             | ug/L | 0.5 J   |

QA SEQUENCE NO: 38240

## QA/QC SURROGATE RECOVERIES

4-BROMOFLOUOROBENZENE (65-135%) 90%

- E = ESTIMATED VALUE (ABOVE LINEAR RANGE)
- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
- R = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE
- J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- \* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.
- SM = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #8464, THIRD EDITION, NOVEMBER 1984

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2558 • FAX 918-251-2599

CLIENT: MCKAY, JERRY  
 OFFICE: 1700 W. ALBANY, SUITE 100 WEST  
 BROKEN ARROW, OKLA. 74012  
 ATTN: DENISE STOKES

REPORT: 11029.0571

DATE: 10-21-92

SAMPLE MATRIX: WATER  
 ANAL # 11029.0571  
 METHOD REFERENCE: EPA-8  
 DILUTION FACTOR: 1  
 DATE SAMPLED: 10-01-92  
 DATE SUBMITTED: 10-01-92  
 DATE ANALYZED: 10-01-92  
 PROJECT: MCKAY, JERRY COMPANY  
 SAMPLE ID: FINSANE

| PARAMETER                               | QUANT.<br>LIMIT | UNIT | RESULTS |
|-----------------------------------------|-----------------|------|---------|
| <u>TOTAL LIQUID PETROLEUM H-CARBONS</u> |                 |      |         |
| GASOLINE                                | 10.0            | MG/L | ND      |

## QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 88%

- \* = SURROGATE RECOVERY OUTSIDE OF 90 LIMITS ON ORIGINAL RUN AND RERUN.
- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
- E = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE
- J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

**METCALF & EDDY, INC**  
**SOIL AND GROUNDWATER LABORATORY ANALYTICAL DATA**  
**ROUND 2 - OCTOBER 1993**



## SOUTHWEST LABORATORY OF OKLAHOMA, INC.

October 27, 1993

Denise Story  
MUTUAL AND BODIE  
1 Pierce Plaza  
Suite 1600-W  
Itasca, IL, 60143

SWLO ID: 14022.01 - 14022.09

Project ID: Marley Pump Company

Dear Ms. Story:

Enclosed please find the analytical results for your samples received in our laboratory on October 21, 1993, for the above captioned project.

If, in your review, you should have any questions or require additional information, please call.

Sincerely,

Daryl Aistett  
Project Officer

MA/rw

Enclosures



**FAX**  
COVER SHEET**Southwest  
Laboratory  
of  
Oklahoma,  
Inc.**

1700 W. Albany

Broken Arrow,

OK 74012-1421

Office: 918-251-2858

FAX: 918-251-2599

**DATE:**10/27/93**# PAGES:**21 incl  
COVER...**TO:**METCALF & EDDIEATTN: DENISE STORY**FROM:**DARIL ALSTATTSOUTHWEST LABORATORIES**COMMENTS:**Report will be AIRBORNEIN ITS ENTIRETY 10/27 PM



# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITABCA, IL, 60143  
ATTN: DENISS STORY

REPORT: 16022.01BX

DATE: 10-27-93

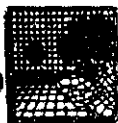
SAMPLE MATRIX: SOIL  
SWLO # 16022.01  
DATE SAMPLED: 10-19-93  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-25-93  
DILUTION FACTOR: 1.0  
METHOD REFERENCE: SW846-8020  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: B-1 4-6

| PARAMETER                 | QUANT.<br>LIMIT | UNIT  | RESULT |
|---------------------------|-----------------|-------|--------|
| <u>GAS CHROMATOGRAPHY</u> |                 |       |        |
| BENZENE                   | 1.0             | ug/Kg | ND     |
| TOLUENE                   | 1.0             | ug/Kg | ND     |
| ETHYLBENZENE              | 1.0             | ug/Kg | ND     |
| XYLENES                   | 1.0             | ug/Kg | ND     |

QA SEQUENCE NO: 3B102591  
QA/QC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-1356) 844

ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
\* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.  
SW = TEST METHOD FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1984

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.011

DATE: 10-27-93

SAMPLE MATRIX: SOIL  
SWLO # 16022.01  
METHOD REFERENCE: OA-1  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-22-93  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: B-1 4-6

| PARAMETER                                            | DET.<br>LIMIT | UNIT  | RESULT |
|------------------------------------------------------|---------------|-------|--------|
| <b><u>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</u></b> |               |       |        |
| GASOLINE                                             | 10.0          | ug/Kg | 13.8   |

**QA/QC SURrogate RECOVERY**

4-BROMOFLUOROBENZENE 109%

- ND - NOT DETECTED ABOVE QUANTITATION LIMIT  
B - COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J - ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I - UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE



# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2909

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 15022.02BX

DATE: 10-27-93

SAMPLE MATRIX: SOIL  
SWLO # 15022.02  
DATE SAMPLED: 10-15-93  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-25-93  
DILUTION FACTOR: 1.0  
METHOD REFERENCE: SW846-8020  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: B-2 6-0

| PARAMETER                 | QUANT.<br>LIMIT | UNIT  | RESULT |
|---------------------------|-----------------|-------|--------|
| <u>GAS CHROMATOGRAPHY</u> |                 |       |        |
| BENZENE                   | 1.0             | ug/Kg | ND     |
| TOLUENE                   | 1.0             | ug/Kg | ND     |
| ETHYLBENZENE              | 1.0             | ug/Kg | ND     |
| XYLENES                   | 1.0             | ug/Kg | ND     |

QA SEQUENCE NO: 38103993  
QA/QC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-1358) 5.4

- ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
S = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RE-RUN.  
SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2558 • Fax (918) 251-2799

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.021

DATE: 10-27-93

SAMPLE MATRIX: SOIL  
SWLO # 16022.02  
METHOD REFERENCE: OA-1  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-22-93  
PROJECT: HARLEY FUMP CO.  
SAMPLE ID: B-2 6-B

| PARAMETER                                    | DET.<br>LIMIT | UNIT  | RESULTS |
|----------------------------------------------|---------------|-------|---------|
| <b>TOTAL PURGABLE PETROLEUM HYDROCARBONS</b> |               |       |         |
| GASOLINE                                     | 10.0          | ug/Kg | ND      |

**GC/MS SURROGATE RECOVERY**

4-BROMOFLUOROBENZENE 83%

ND - NOT DETECTED ABOVE QUANTITATION LIMIT  
B - COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J - ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I - UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE



# **SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.04BX

DATE: 10-27-93

SAMPLE MATRIX: SOIL  
SWLO # 16022.04  
DATE SAMPLED: 10-19-93  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-25-93  
DILUTION FACTOR: 1.0  
METHOD REFERENCE: SW846-8020  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: B-3 6-8

| PARAMETER                 | QUANT.<br>LIMIT | UNIT  | RESULT |
|---------------------------|-----------------|-------|--------|
| <b>GAS CHROMATOGRAPHY</b> |                 |       |        |
| BENZENE                   | 1.0             | ug/Kg | ND     |
| TOLUENE                   | 1.0             | ug/Kg | 0.6 J  |
| ETHYLBENZENE              | 1.0             | ug/Kg | ND     |
| XYLENES                   | 1.0             | ug/Kg | ND     |

QA SEQUENCE NO: 38102593  
QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE (65-1356)

76%

- ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
\* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.  
SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

10/27/93 14:27

27018 251 0303

SW LABORATORIES

0011/021



# **SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.041

DATE: 10-27-93

SAMPLE MATRIX: SOIL  
SWLC # 16022.04  
METHOD REFERENCE: QA-1  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-22-93  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: B-3 6-0

| PARAMETER                                            | DET.<br>LIMIT | UNITS | RESULTS |
|------------------------------------------------------|---------------|-------|---------|
| <b><u>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</u></b> |               |       |         |
| GASOLINE                                             | 10.0          | ug/Kg | 13.0    |

## **QA/QC SURrogate RECOVERY**

4-BROMOFLUOROBENZENE

84%

ND - NOT DETECTED ABOVE QUANTITATION LIMIT  
B - COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J - ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I - UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE



# **SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.03BX

DATE: 10-27-93

SAMPLE MATRIX: SOIL  
SWLO # 16022.03  
DATE SAMPLED: 10-19-93  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-25-93  
DILUTION FACTOR: 1.0  
METHOD REFERENCE: SW846-8020  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: MW-4 9.5-11.5

| PARAMETER                        | QUANT.<br>LIMIT | UNIT  | RESULT |
|----------------------------------|-----------------|-------|--------|
| <b><u>GAS CHROMATOGRAPHY</u></b> |                 |       |        |
| BENZENE                          | 1.0             | ug/Kg | ND     |
| TOLUENE                          | 1.0             | ug/Kg | ND     |
| ETHYLBENZENE                     | 1.0             | ug/Kg | ND     |
| XYLENES                          | 1.0             | ug/Kg | ND     |

QA SEQUENCE NO: 38102583  
**QA/QC SURROGATE RECOVERY**

4-BROMOFLUOROBENZENE (65-1358) 76%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
\* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.  
SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986



10/27/93

14:28

251 0363

SV LABORATORIES

0000/021

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.031

DATE: 10-27-93

SAMPLE MATRIX: SOIL  
SWLO # 16022.03  
METHOD REFERENCE: QA-1  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-22-93  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: MW-4 9.5-11.5

| PARAMETER                                     | DET.<br>LIMIT | UNIT  | RESULTS |
|-----------------------------------------------|---------------|-------|---------|
| <u>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</u> |               |       |         |
| GASOLINE                                      | 10.0          | ug/Kg | ND      |

GLAC SURROGATE PROFILES

4-BROMOFLUOROBENZENE

746

ND - NOT DETECTED ABOVE QUANTITATION LIMIT  
S - COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J - ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I - UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2856 • Fax (918) 251-2999

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60163  
ATTN: DENISE STORY

REPORT: 16022.05BX

DATE: 10-27-93

SAMPLE MATRIX: WATER  
SWLO # 16022.05  
DATE SAMPLED: 10-20-93  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-26-93  
DILUTION FACTOR: 1.0  
METHOD REFERENCE: SW846-8020  
PROJECT: HAPLEY PUMP CO.  
SAMPLE ID: MW-1

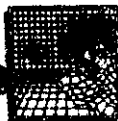
| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULTS |
|---------------------------|-----------------|------|---------|
| <b>GAS CHROMATOGRAPHY</b> |                 |      |         |
| BENZENE                   | 1.0             | ug/L | ND      |
| TOLUENE                   | 1.0             | ug/L | .6 J    |
| ETHYLBENZENE              | 1.0             | ug/L | ND      |
| XYLENES                   | 1.0             | ug/L | .6 J    |

QA SEQUENCE NO: 38102693  
QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE (65-1354)

107%

- ND - NOT DETECTED ABOVE QUANTITATION LIMIT  
B - ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J - ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
\* - SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.  
SW - TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2999

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.051

DATE: 10-27-93

SAMPLE MATRIX: WATER  
SWLO # 16022.05  
METHOD REFERENCE: OA-1  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-25-93  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: WW-1

| PARAMETER                                     | DET.<br>LIMIT | UNIT | RESULT |
|-----------------------------------------------|---------------|------|--------|
| <b>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</b> |               |      |        |
| GASOLINE                                      | 10.0          | ug/L | ND     |

**QA/QC SUBSTRATE RECOVERY**

4-BROMOFLUOROBENZENE 113%

ND - NOT DETECTED ABOVE QUANTITATION LIMIT  
B - COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J - ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I - UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.06BX

DATE: 10-27-93

SAMPLE MATRIX: WATER  
SWLO / 16022.06  
DATE SAMPLED: 10-20-93  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-26-93  
DILUTION FACTOR: 5.0  
METHOD REFERENCE: SW846-8020  
PROJECT: HARLEY PUMP CO.  
SAMPLE ID: MW-2

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULTS |
|---------------------------|-----------------|------|---------|
| <b>GAS CHROMATOGRAPHY</b> |                 |      |         |
| BENZENE                   | 5.0             | ug/L | 158     |
| TOLUENE                   | 5.0             | ug/L | 21.8    |
| ETHYLBENZENE              | 5.0             | ug/L | 3.6 J   |
| XYLENES                   | 5.0             | ug/L | 175     |

**QA SEQUENCE NO: 15102693**  
**QA/QC SURROGATE RECOVERIES**

4-BROMOFLUOROBENZENE (65-1354) 1224

- ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
\* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.  
SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2850 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.061

DATE: 10-27-93

SAMPLE MATRIX: WATER  
SWLO # 16022.06  
METHOD REFERENCE: OA-1  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-25-93  
PROJECT: WARLEY PUMP CO.  
SAMPLE ID: MW-2

| PARAMETER                                            | DET.<br>LIMIT | UNIT | RESULTS |
|------------------------------------------------------|---------------|------|---------|
| <b><u>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</u></b> |               |      |         |
| GASOLINE                                             | 10.0          | ug/L | 995     |

**QA/QC SURROGATE RECOVERY**

4-BROMOFLUOROBENZENE 197% \*\*

- \*\* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN  
ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE



# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 West Albany • Broken Arrow Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.07BX

DATE: 10-27-93

SAMPLE MATRIX: WATER  
SWLO # 16022.07  
DATE SAMPLED: 10-20-93  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-26-93  
DILUTION FACTOR: 1.0  
METHOD REFERENCE: SW846-8020  
PROJECT: HARLEY PUMP CO.  
SAMPLE ID: MW-3

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULTS |
|---------------------------|-----------------|------|---------|
| <u>GAS CHROMATOGRAPHY</u> |                 |      |         |
| BENZENE                   | 1.0             | ug/L | 7.9     |
| TOLUENE                   | 1.0             | ug/L | 25.6    |
| ETHYLBENZENE              | 1.0             | ug/L | 2.9     |
| XYLENES                   | 1.0             | ug/L | 6.1     |

QA SEQUENCE NO: 2B102693

QA/QC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-1354) 1214

ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
\* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.  
SM = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.071

DATE: 10-27-93

SAMPLE MATRIX: WATER  
SWLO # 16022.07  
METHOD REFERENCE: OA-1  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-25-93  
PROJECT: HARLEY PUMP CO.  
SAMPLE ID: MW-3

| PARAMETER                                     | DET.<br>LIMIT | UNIT | RESULTS |
|-----------------------------------------------|---------------|------|---------|
| <b>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</b> |               |      |         |
| GASOLINE                                      | 10.0          | ug/L | 177     |

**QA/QC SURrogate RECOVERY**

4-BROMOFLUOROBENZENE 89%

- ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE



# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.08BX

DATE: 10-27-93

SAMPLE MATRIX: WATER  
SWLO # 16022.08  
DATE SAMPLED: 10-20-93  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-25-93  
DILUTION FACTOR: 1.0  
METHOD REFERENCE: SW846-8020  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: MW-4

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULT |
|---------------------------|-----------------|------|--------|
| <b>GAS CHROMATOGRAPHY</b> |                 |      |        |
| BENZENE                   | 1.0             | ug/L | ND     |
| TOLUENE                   | 1.0             | ug/L | ND     |
| ETHYLBENZENE              | 1.0             | ug/L | ND     |
| XYLENES                   | 1.0             | ug/L | ND     |

QA SEQUENCE NO: 38102593

QA/QC SURROGATE RECOVERY

4-BROMOPYCOROBENZENE (65-1354) 86%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
\* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.  
SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986



**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2850 • Fax (918) 251-2999

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.081

DATE: 10-27-93

SAMPLE MATRIX: WATER  
SWLO # 16022.08  
METHOD REFERENCE: QA-1  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-25-93  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: MW-4

| PARAMETER                                     | DET.<br>LIMIT | UNIT | RESULTS |
|-----------------------------------------------|---------------|------|---------|
| <b>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</b> |               |      |         |
| CASOLINE                                      | 10.0          | ug/L | ND      |

**QA/QC SURROGATE RECOVERY**

4-BROMOFLUOROBENZENE 84%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2999

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.09EX

DATE: 10-27-93

SAMPLE MATRIX: WATER  
SMLO # 16022.09  
DATE SAMPLED: 10-20-93  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-25-93  
DILUTION FACTOR: 1.0  
METHOD REFERENCE: SW846-BJ20  
PROJECT: MARLEY PUMP CC.  
SAMPLE ID: MW-4D

| PARAMETER                        | QUANT.<br>LIMIT | UNIT | RESULTS |
|----------------------------------|-----------------|------|---------|
| <b><u>GAS CHROMATOGRAPHY</u></b> |                 |      |         |
| BENZENE                          | 1.0             | ug/L | ND      |
| TOLUENE                          | 1.0             | ug/L | ND      |
| ETHYLBENZENE                     | 1.0             | ug/L | ND      |
| XYLENES                          | 1.0             | ug/L | ND      |

QA SEQUENCE NO: 18102593

QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE (65-1356)

69%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
\* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RE-RUN.  
SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

30 West Albany • Broken Arrow, Oklahoma 76012 • Office (918) 251-2856 • Fax (918) 251-2599

CLIENT: METCALF AND EDDIE  
1 PIERCE PLAZA, STE 1400-W  
ITASCA, IL, 60143  
ATTN: DENISE STORY

REPORT: 16022.091

DATE: 10-27-93

SAMPLE MATRIX: WATER  
SWLO # 16022.09  
METHOD REFERENCE: OA-1  
DATE SUBMITTED: 10-21-93  
DATE ANALYZED: 10-25-93  
PROJECT: MARLEY PUMP CO.  
SAMPLE ID: Mw-4L

| PARAMETER                                     | DET.<br>LIMIT | UNIT | RESULTS |
|-----------------------------------------------|---------------|------|---------|
| <u>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</u> |               |      |         |
| GASOLINE                                      | 10.0          | ug/L | ND      |

OA/OC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 89%

ND - NOT DETECTED ABOVE QUANTITATION LIMIT  
B - COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J - ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
1 - UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

Q 001/921

SP LABORATORIES

10/27/93 14:22 Q910 251 9363



## CHAIN OF CUSTODY RECORD

SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 N. Main • Broken Arrow, Oklahoma 74012  
Oklahoma 405-251-9363 • Fax 405-251-9363

LABORATORY FILE

Ketchum 12/24

CASE CONTACT

Daniel Strong

PHONE NUMBER

788 7750300

PROJECT NUMBER

Q10145

PROJECT NAME

Therapy Papp Co.

HOW TO A TEXT REQUEST

SAMPLE IDENTIFICATION

Ketchum 12/24

| MA NO | DATE  | TIME | COMP | ORIG  | STATION LOG/PLAN | UNIT | NO OF COMPANIES | REMARKS |
|-------|-------|------|------|-------|------------------|------|-----------------|---------|
| 1700  | 12:10 |      | X    | B-1   | 4-6              | Soil | 1-400           |         |
| 1700  | 12:47 |      | X    | B-2   | 6-8              | Soil | 1-400           |         |
| 1700  | 13:55 |      | X    | MW-4  | 95-115           | Soil | 1-400           |         |
| 1700  | 16:10 |      | X    | B-3   | 6-8              | Soil | 1-400           |         |
| 1700  | 09:05 |      | V    | MW-1  |                  | Soil | 2-400           |         |
| 1700  | 09:14 |      | V    | MW-2  |                  | Soil | 2-400           |         |
| 1700  | 09:00 |      | V    | MW-3  |                  | Soil | 2-400           |         |
| 1700  | 09:15 |      | V    | MW-4  |                  | Soil | 2-400           |         |
| 1700  | 09:15 |      | V    | MW-40 |                  | Soil | 2-400           |         |

No more water used  
only inTAT = 7 days Result  
needed by 10/28/93  
Please call Denise-  
Strong w/ questions

|                         |          |       |                         |          |       |                         |
|-------------------------|----------|-------|-------------------------|----------|-------|-------------------------|
| RECEIVED BY (Signature) | DATE     | TIME  | RECEIVED BY (Signature) | DATE     | TIME  | RECEIVED BY (Signature) |
| Ketchum 12/24           | 10/27/93 | 14:30 |                         |          |       |                         |
| RECEIVED BY (Signature) | DATE     | TIME  | RECEIVED BY (Signature) | DATE     | TIME  | RECEIVED BY (Signature) |
|                         |          |       |                         | 10/27/93 | 14:30 | Ketchum 12/24           |
| RECEIVED BY (Signature) | DATE     | TIME  | RECEIVED BY (Signature) | DATE     | TIME  | RECEIVED BY (Signature) |
|                         |          |       |                         |          |       |                         |

FORM NO 1002

REV 1-89

OCT 27 '93 14:38

910 251 9363

PAGE 003

## XII. Contamination Source

### A. Identify the source of contamination at the site.

The potential source of contamination is a 500 gallon manufactured steel UST

### >> B. Attach Appendix "XII(B) - Off-Site Contamination Source Support Data"

If the contamination source identified in XII(A) is an off-site source, justify your conclusion with analytical data and maps showing the site under investigation and potential off-site sources and groundwater flow direction.

APPENDIX XII (B) - OFF-SITE CONTAMINATION  
SOURCE SUPPORT DATA

Not applicable. The source is on-site.

### XIII. Site Risk Classification

#### A. HIGH RISK SITE CONDITIONS

The following describe high risk site conditions. Conditions numbered 7, 9, 13, and 14 include a means, based on specific site factors, for proposing a low risk classification. Check the appropriate box if documentation has been provided to substantiate the existence of specific site conditions that will result in a low risk classification. A site is classified as high risk if any of the following conditions exist and documentation is not provided to confirm a low risk classification. All responses must be justified with technical and hydrogeological data obtained during the site assessment and the application of recognized engineering, geological and hydrogeological principles. Give your justification for each answer on appendix "XIII - Site Risk Classification Justifications." Number the responses to correspond with the condition description (i.e., A1, A2, etc.).

#### CONDITION DESCRIPTION

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) The Threshold Limit Value-Time Weighted Average (TLV-TWA) for benzene in occupied structures exceeds or is likely to exceed 10 parts per million for more than 8 hours per day.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <input type="checkbox"/> YES, HIGH RISK<br><input checked="" type="checkbox"/> NO                                                                                                                                                               |
| 2) The concentration of combustible gases in structures, basements, crawl spaces, utility conduits, storm or sanitary sewers, vaults or any other confined space exceeds or is likely to exceed 10% of the Lower Explosive Limit (LEL).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <input type="checkbox"/> YES, HIGH RISK<br><input checked="" type="checkbox"/> NO                                                                                                                                                               |
| 3) Surface water quality criteria standards contained in subtitle 547-61.3(455B) of the Iowa Administrative Code are exceeded or are likely to be exceeded due to a hydrogeologic connection between the surface water and the contamination zone.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <input type="checkbox"/> YES, HIGH RISK<br><input checked="" type="checkbox"/> NO                                                                                                                                                               |
| 4) Petroleum contaminated soil exceeding 100 mg/kg total organic hydrocarbons is in contact with a utility trench containing a PVC drinking water transmission line.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <input type="checkbox"/> YES, HIGH RISK<br><input checked="" type="checkbox"/> NO                                                                                                                                                               |
| 5) The petroleum contamination in utility trenches exceeds the corrective action levels in 125.3(3) of the Iowa Administrative Code.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <input type="checkbox"/> YES, HIGH RISK<br><input checked="" type="checkbox"/> NO                                                                                                                                                               |
| 6) Petroleum contamination is present at concentrations or concentrations are likely to occur, to cause physical damage to a utility conduit or a structure.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <input type="checkbox"/> YES, HIGH RISK<br><input checked="" type="checkbox"/> NO                                                                                                                                                               |
| 7) Soil with a total organic hydrocarbon level greater than 100 mg/kg is located within 1,000 feet of an active well used as a public or private water source.<br><br>A site may be classified as low risk if a groundwater professional can demonstrate the water source will not be impacted by the soil contamination to the extent that an MCL is exceeded or in the absence of an MCL, an Action Level is exceeded. Factors that must be considered in evaluating the impact of the remaining soil contamination include well depth, construction, radius of influence and use; area hydrogeological characteristics; soil permeability; transmissivity, and contamination concentrations and persistence; chemical characteristics, and migration potential of the released substances.                                                                                                                                                                              | <input type="checkbox"/> YES, HIGH RISK<br><input checked="" type="checkbox"/> NO<br><br>Documentation is provided to support a LOW RISK CLASSIFICATION<br><br><input type="checkbox"/> YES, LOW RISK<br><input checked="" type="checkbox"/> NO |
| 8) Soil with a total organic hydrocarbon level greater than 100 mg/kg is located within the seasonal high groundwater level of a protected groundwater source or groundwater serving a public or private water source.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <input type="checkbox"/> YES, HIGH RISK<br><input checked="" type="checkbox"/> NO                                                                                                                                                               |
| 9) The petroleum release occurred in an area of fractured limestone or karst topography (i.e., topography formed on limestone, gypsum, and other rocks by dissolution, characterized by sinkholes, caves and underground drainage).<br><br>A site may be classified low risk if a groundwater professional can demonstrate that the protected groundwater sources in the area of the petroleum release will not be impacted by the contamination to the extent that an MCL is exceeded or in the absence of an MCL, an Action Level is exceeded. Factors that must be considered in evaluating the impact of the petroleum contamination include area hydrogeological characteristics; separation distance between the contaminated zone and protected groundwater sources; soil permeability and transmissivity; overburden thickness and contamination concentrations; and the persistence, chemical characteristics and migration potential of the released substances. | <input type="checkbox"/> YES, HIGH RISK<br><input checked="" type="checkbox"/> NO<br><br>Documentation is provided to support a LOW RISK CLASSIFICATION<br><br><input type="checkbox"/> YES, LOW RISK<br><input checked="" type="checkbox"/> NO |
| 10) A public or private water supply is or is likely to be contaminated to the extent that an MCL is exceeded; or in the absence of an MCL, an Action Level is exceeded.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <input type="checkbox"/> YES, HIGH RISK<br><input checked="" type="checkbox"/> NO                                                                                                                                                               |
| 11) A protected groundwater source is contaminated to the extent that an MCL is exceeded; or in the absence of an MCL, an Action Level is exceeded.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/> YES, HIGH RISK<br><input checked="" type="checkbox"/> NO                                                                                                                                                               |

12. The contaminated groundwater plume is within 100 feet of natural or man-made structures or conduits that could allow the vertical or horizontal migration of contaminants to a protected groundwater source that is used as a public or private water source.

☐ YES, HIGH RISK  
☒ NO

13. The contaminated groundwater plume is within 1,000 feet of an active public or private water source.

☐ YES, HIGH RISK  
☒ NO

A site may be classified low risk if a groundwater professional can demonstrate that the protected groundwater source will not be impacted by the groundwater contamination to the extent that an MCL is exceeded or in the absence of an MCL, an Action Level is exceeded. Factors that must be considered in evaluating the impact of the remaining groundwater contamination include well depth, construction, radius of influence and use, area hydrogeological characteristics, soil permeability and transmissivity, contamination concentrations and persistence, chemical characteristics and migration potential of the released substance.

Documentation is provided to support a LOW RISK CLASSIFICATION.

☒ YES, LOW RISK  
☐ NO

14. The material separating groundwater serving as a public or private water source, or which is a protected groundwater source, from soil with a total organic hydrocarbon level greater than 100 mg/kg which has a hydraulic conductivity greater than  $10^{-4}$  meters per day.

☐ YES, HIGH RISK  
☒ NO

The separating material must have a hydraulic conductivity less than or equal to  $10^{-4}$  meters per day, a minimum thickness of three meters and be free of subsurface discontinuities between the contamination zone and the groundwater for the site to be classified low risk. A site can be classified low risk if a groundwater professional can demonstrate with hydrogeological and risk assessment data that the separating material will prevent or inhibit the migration of contamination to the groundwater to the extent that an MCL, or in the absence of an MCL, an Action Level will not be exceeded. A sufficient number of measurements of the hydraulic conductivity shall be made to accurately identify the hydrogeologic conditions of the separating material under the full area extent of the contamination zone. Measurements shall be made at a minimum of two locations. The distance between adjacent measurement locations shall not exceed 100 feet. The department may require additional measurements based on the hydrogeological complexity of the site.

Documentation is provided to support a LOW RISK CLASSIFICATION

☒ YES, LOW RISK  
☐ NO

## B. LOW RISK SITE CONDITIONS

The following describe low risk site conditions. Check the boxes that describe the site conditions.

### Condition Description

1) The soil total organic hydrocarbon concentration exceeds 100 mg/kg or the groundwater concentration exceeds an MCL or in the absence of an MCL, an Action Level is exceeded, but high risk conditions do not exist and are not likely to occur.

☒ YES, LOW RISK  
☐ NO

2) High risk conditions numbered 7, 9, 13 and 14 exist, but documentation is provided to substantiate the claim that specific site conditions are present that will result in a low risk classification.

☒ YES, LOW RISK  
☐ NO

## C. NO ACTION REQUIRED SITE CONDITIONS

The following describe no action required site conditions. Check the boxes that describe the site conditions.

### Condition Description

1) The soil total organic hydrocarbon concentration is equal to or less than 100 mg/kg and the groundwater concentration is equal to or less than an MCL or in the absence of an MCL, is equal to or less than an Action Level and high risk or low risk conditions do not exist and are not likely to occur.

☐ YES, NO ACTION  
☒ NO

>> Attach Appendix "XIII - Site Risk Classification Justification"



#### A. HIGH RISK SITE CONDITIONS

1. Confined spaces or occupied spaces have not been impacted by the petroleum release as evidenced by the PID vapor survey (0 ppm) conducted in the manhole for the pump house located near the southwest corner of the property. Therefore, benzene in occupied structures/utilities will not likely exceed 10 ppm for an 8 hour day.
2. A confined space survey was conducted and vapors were not present (see answer to question 1).
3. Surface water bodies such as lakes, streams, and ponds are not located within 1,000 feet (304.8 meters) of the designated petroleum impacted area. At an average hydraulic conductivity of 2.61 m/year, it would take over 117 years to reach the creek located east of this site. Surface water body samples were not collected.
4. Soil analytical data did not exceed 100 mg/kg. Therefore, no soil exceeding 100 mg/kg is in contact with a water transmission line. Furthermore, the water transmission line near the site are made of cast iron and not PVC.
5. No open utility trenches were available to conduct a vapor survey. A vapor survey was conducted in a manhole for the pump house located in the southwest corner of the site. The PID readings were equal to 0 ppm.
6. The petroleum contamination is not present in high concentrations to affect or cause any damage to utility lines or structures. Furthermore, the utility lines are not in contact with the groundwater (groundwater ranges in depth from 11 feet to 18 feet below grade). The deepest utility trench is 8 feet below grade.
7. Laboratory analytical data indicate that soils did not exceed 100 mg/kg for total organic hydrocarbons. All inhabitants of 59th Street, rely on the city of Davenport as a water supply. Private or public wells are not located within 1,000 feet of the impacted area. Therefore, well information is not available as evidence.
8. Laboratory analytical data for soils did not exceed 100 mg/kg for total organic hydrocarbon. Therefore, the seasonal high groundwater level of a protected groundwater source or groundwater serving as a public or private water source, is not affected. The city of Davenport obtains its water from the Mississippi River (the public water supply source).
9. The petroleum release did not occur in fractured limestone nor karst topography. The site is not characterized by sinkholes, caves, and/or underground drainage. The site is characterized by clayey silt underlain by a glacial till. No discontinuities occur in the clayey silt.

For further information, see Section II, Current site conditions for general geology.

10. Public water supplies are not located within 1,000 feet of the impacted area. The Mississippi River is the public water supply source. Therefore, it is unlikely, given the hydraulic conductivities of the soil ( $10^{-4}$  m/sec) that a public water source will be impacted. The contaminated area is not greater than 19 - 25 feet below grade. Deeper water sources are protected by an aquitard, a glacial till, which lies 20 - 25 feet below grade and is continuous. The conductivity for a glacial till ranges from  $10^{-4}$  m/sec to  $10^{-11}$  m/sec.
11. It is unlikely, given the hydraulic conductivities of the soil ( $10^{-4}$  m/sec) that a protected water source would be impacted. The public water source for drinking water is the Mississippi River. The contaminated area is not greater than 19 - 25 feet below grade. Deeper water sources are protected by an aquitard, a glacial till, which lies 20 - 25 feet below grade and is continuous.
12. The contaminated groundwater plume is within 100 feet of natural or man-made structures or conduits. The utilities, at their maximum buried depth are 8 feet below grade. The groundwater level at the site ranges from 11 feet (upgradient well MW-3) to 18 feet below grade (downgradient wells MW-2 and MW-4). Most utilities are located near MW-2 and MW-4. Therefore, since the utilities are located significantly above the water table, the utility trenches will not transport contaminants to the subsurface and impact the protected groundwater source that is used for a public or private water supply (The Mississippi River is used as the public water supply). For further information, see answers to questions 10 and 11.
13. A public or private water source is not located within 1,000 feet of the groundwater plume. Data would be provided to document such a phenomenon if wells were located within 1,000 feet of the source. → uuu
14. The subsurface soil (clayey silt) did not exceed 100 mg/kg total organic hydrocarbons. The subsurface soil consists of a clayey silt (thickness of 20 feet to 25 feet) and is underlain by a glacial till. The glacial till depth ranges from 20 feet - 25 feet below grade. The soil strata is consistent throughout the site as evidenced by on-site borings conducted on site. The thickness of the clayey silt is greater than 3 meters and free of discontinuities. Hydraulic conductivities for the clayey silt in the three on-site monitoring wells ranged from  $7.88 \times 10^{-6}$  m/sec to  $9.3 \times 10^{-4}$  m/sec. This conductivity is indicative of silt and loess (Freeze and Cherry). The groundwater at the site does not serve as a public source for drinking water.

Documented evidence indicates that glacial till has a hydraulic conductivity equal to approximately  $10^{-9}$  m/sec to  $10^{-11}$  m/sec (Freeze and Cherry). This layer acts as an aquitard (a less permeable stratigraphic sequence) and helps protect the deeper water sources from impact.

The substance which needs to be addressed is gasoline. Gasoline consists of a wide variety of hydrocarbons. Benzene, ethylbenzene, toluene and xylene (BTEX) will be used as surrogate parameters for the wide variety of hydrocarbons found in gasoline.

Although biodegradable, gasoline may persist in the environment while adsorbed on soil particles, floating on groundwater as a separate phase liquid, or dissolved in the groundwater. Gasoline constituents may migrate, however, the rate of migration is controlled by the geology of the impacted area.

Physico-chemical characteristics of gasoline and BETX compounds are presented below:

| CHEMICAL             | FLASH POINT (°F) | FLAMMABLE LIMITS (%) | DENSITY (at 20°C) | SOLUBILITY (% at 20°C) | VAPOR PRESSURE (mm Hg) | HENRY'S LAW CONSTANT |
|----------------------|------------------|----------------------|-------------------|------------------------|------------------------|----------------------|
| gasoline             | -36              | 1.3 - 7.4            | 0.73              | NA                     | 383                    | NA                   |
| benzene              | 12               | 1.3 - 7.1            | 0.88              | 0.18                   | 75                     | 240                  |
| toluene              | 40               | 1.3 - 7.1            | 0.87              | 0.05                   | 22                     | 330                  |
| ethylbenzene         | 59               | 1.0 - 6.7            | 0.87              | 0.02                   | 7.1                    | 350                  |
| xylene (all isomers) | 81 - 90          | 1.0 to 7             | 0.86 to 0.88      | immiscible             | 9                      | not applicable       |

Due to the low permeability of the soils, the migration potential of these constituents is low.

**B. LOW RISK SITE CONDITIONS**

1. Soil -- The soil analytical data indicated that the 100 mg/kg action level for total organic hydrocarbons has not been exceeded.

Groundwater --

MCL: Benzene - 0.005 mg/l  
Ethylbenzene - 0.7 mg/l  
Toluene - 1 mg/l  
Xylene - 10 mg/l

IAC: Benzene - 0.005 mg/l  
Ethylbenzene - 0.7 mg/l  
Toluene - 2.42 mg/l  
Xylene - 12 mg/l

Groundwater analytical results for monitoring well MW-1 indicate that Both benzene and ethylbenzene constituents were below the laboratory detection limits. Both Toluene and Xylenes, 0.006J, were detected but below the laboratory detection limits. Therefore, MCL nor IAC action levels were exceeded.

Groundwater analytical results for MW-2 indicate the presence of BTEX constituents in the groundwater. Benzene, 0.168 ppm, exceeds both the MCL and the IAC action level. Toluene, 0.0218 ppm, does not exceed the MCL or the IAC action level. Ethylbenzene, 0.0036J ppm, does not exceed the MCL or the IAC action level. Xylene, 0.175 ppm, does not exceed the MCL or the IAC action level.

Groundwater analytical results for MW-3 indicates the presence of BTEX constituents. Benzene, 0.0079 ppm, exceeds both the MCL and the IAC action level. Ethylbenzene, 0.0029 ppm, did not exceed the IAC nor the MCL action levels. Toluene, 0.006J ppm, did not exceed the MCL or the IAC action level. Xylene, 0.006J, was detected, however it was below the laboratory detection limits.

Groundwater analytical results for MW-4, the southernmost well, were all non-detect. Therefore, the transition zone or the "0" line has been determined.

High risk conditions do not occur at this site. Please see answer to question 1 - 14, High Risk Classification, for further details of why high risk conditions do not occur at this facility.

2. High risk conditions do not exist at this site. See answers to questions 1 - 14 for further information of why high risk conditions do not occur at this facility.

C. NO ACTION REQUIRED SITE CONDITIONS

1. Soil -- The soil analytical data indicated that the 100 mg/kg action level for total organic hydrocarbons has not been exceeded. Therefore, no action is required for the soil.

Groundwater -- Laboratory analytical results indicate that benzene, the only petroleum hydrocarbon constituent, has exceeded the IAC and MCL action level of 0.005 mg/l in both MW-3 (0.0079 mg/l) and MW-2 (0.168 mg/l). All other petroleum constituents are either below the laboratory detection limits or the IAC/MCL action levels (See Appendix X for tabulated analytical data).

Additionally, the site has been classified as a low risk site. Please refer to the answers given in questions 1 - 14, High Risk Classification, for further details.

#### XIV. Corrective Action Response

The corrective action response involves the identification of the best available treatment technology or best available management practices to address the contamination at the site. The corrective action response must be consistent with the site risk classification.

Contaminated sites classified as high risk can be reclassified to low risk if the condition causing the classification is abated. For example, if the only reason a site was classified high risk is because the soil around a PVC water line is contaminated, the site could be reclassified to low risk if the water line was replaced. For such sites identified as high risk, propose a corrective action response that will result in the reclassification of the site to low risk.

Phase proceed to part "A" if the site has been classified as high risk. Sites classified as low risk are subject to best management practices which will include contamination monitoring. Phase proceed to part "B" if the site has been classified as low risk. Sites classified as no risk are not required to remediate or monitor.

#### A. High Risk Site Corrective Action Recommendations

1. Identify below the contamination phases and estimated phase volumes at the site:

|                                                                |                              |                             |
|----------------------------------------------------------------|------------------------------|-----------------------------|
| Vadose zone soil contamination present?                        | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| If yes, approximate volume of contaminated soil present        | _____                        | Cubic Yards                 |
| Dissolved phase petroleum product present in the groundwater?  | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| If yes, approximate volume of contaminated groundwater present | _____                        | Gallons                     |
| Free phase petroleum product present?                          | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| If yes, approximate volume of free phase product present       | _____                        | Gallons                     |

2. List at least two treatment technologies available to address the contamination at the site.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

#### >> 3. Attach Appendix "XIV(A3) - Treatment Technology Evaluation"

Provide an evaluation of each treatment technology from a XV(A3) organized as follows:

- 1) TREATMENT TECHNOLOGY. Identify the treatment technology.
- 2) TREATMENT METHOD EFFECTIVENESS. Evaluate the treatment method's capability to reduce the compounds of concern to acceptable levels and estimate the length of time it will take to reduce the compounds to these levels.
- 3) RELIABILITY. Evaluate factors that may have an impact on the reliability of the treatment system. Consider such factors as groundwater quality, biological growths, design complexity, weather, operational maintenance and monitoring requirements, etc.
- 4) SITE CHARACTERISTICS. Evaluate the factors that may have an impact on the practicality of using the treatment method. Consider such factors as site geology, hydraulic conductivity, groundwater quality, site location and ability to maintain and monitor hydraulic control of the groundwater plume.
- 5) COST ESTIMATES. Evaluate start-up, operational and maintenance costs.
- 6) ENVIRONMENTAL, PUBLIC HEALTH and SAFETY BENEFITS and DISADVANTAGES. Evaluate the environmental and public health and safety benefits and disadvantages of the treatment system. Consider such factors as air emissions, wastewater discharges, groundwater injection systems, private seepage, vandalism, access, etc.

#### >> 4. Attach Appendix "XIV(A4) - Best Available Technology"

Lia your selection of the best available treatment technology to address the contamination phases at this site. Provide a detailed justification and explanation for selection of this technology. Base the justification narrative on professional judgment considering actual cost, actual equipment or techniques currently in use, published technical studies, site hydrogeology and research results, engineering and groundwater performance evaluation estimates, consultation with experts in the field, capital and operation costs, and problems or risks of other regulatory agencies. Innovative treatment technology design solutions are encouraged but must be substantiated by system assessment and technical data that will support the best available treatment technology selection. Do not submit treatment system design work until the proposed best available treatment technology concept has been accepted by IDNE.

APPENDIX XIV (A3) - TREATMENT TECHNOLOGY EVALUATION

This is not classified as high risk. Therefore, this section has not been completed.

#### APPENDIX XIV (A4) - BEST AVAILABLE TECHNOLOGY

This is not classified as high risk. Therefore, this section has not been completed.



### 5. Report Submittal

Please send one copy of the completed SCR and appendices to the Iowa Department of Natural Resources, List Coordinator, Wallace Building, Des Moines, IA 50319 and one copy of the completed SCR and appendices to GAB Business Services, Inc. POB 3837, Des Moines, IA 50322. Additional information or clarification may be requested.

Following approval of the SCR, IDNR will require the submission of a Corrective Action Design Report (CADR). The CADR will contain technical information specific to the treatment system chosen to remediate the site and a monitoring proposal designed to determine the effectiveness of the system.

### A. Low Risk Site Corrective Action Recommendations

#### 1. Identify below the contamination phases and estimated phase volumes at the site:

Vadose zone soil contamination present?

YES [ ]

NO [ ]

If yes, approximate volume of contaminated soil present

N/A

Cubic Yards

Dissolved phase petroleum product present in the groundwater?

YES [X]

NO [ ]

If yes, approximate volume of contaminated groundwater present

145.65

Gallons

Free phase petroleum product present?

YES [ ]

NO [X]

If yes, approximate volume of free phase product present

N/A

Gallons

#### >> 2. Attach Appendix "XIV(B2) - Best Management Practice"

Provide a detailed best management practice plan. At a minimum, the plan must contain:

- 1) Description of leak detection activities that will be implemented at the site.
- 2) Schedule of activities and description of any prohibited practices, and other management practices, or a combination thereof, which will be implemented to prevent additional contamination.
- 3) Assurances the analytical and investigatory technical requirements discussed and referenced in this SCR will be followed. Vapor analysis results will be accepted provided that:

a) It can be demonstrated that the media being sampled and sampling points are conducive to the detection of contamination movement and increases in concentration (i.e., the sampling radius must be determined).

b) Gas chromatography or similar method of analysis is used for analysis of samples.

c) Samples for laboratory analysis must be obtained if the following screening levels are exceeded

0.1 mg/l TPHC (near diesel facilities) for soil gas (in situ, partial vacuum extraction)

1.0 mg/l TPHC (near gasoline facilities) for soil gas (in situ, partial vacuum extraction)

0.5 mg/l TPHC for groundwater (head space analysis)

1.0 mg/kg TPHC (near diesel facilities) for soil (head space analysis)

10.0 mg/kg TPHC (near gasoline facilities) for soil (head space analysis)

#### >> 3. Attach Appendix "XIV(B3) - Monitoring Plan"

Provide a monitoring plan that will ensure any significant increase in contamination concentration or movement is detected. The number and locations of monitoring sites must be consistent with contamination plume definition, soil permeability, hydraulic conductivity and groundwater flow direction. Include site maps to show monitoring locations. The following frequency is recommended. Any proposed reduction in the recommended sampling must be justified. Factors that must be considered in the justification include the migration potential of the released substance, potential impact on the environment and public health if migration of the soil or groundwater contamination occurs, area hydrogeologic characteristics, soil permeability, transmissivity, and contaminant concentrations and persistence.

#### YEARS AFTER APPROVAL OF THE MONITORING PLAN

#### SAMPLE IN

- 1) one through three
- 2) four through six
- 3) seven through nine
- 4) twelve

- calendar quarters 2, 3 and 4
- calendar quarters 2 and 4
- calendar quarter 2
- calendar quarter 2

### 4. Report Submittal

Please send one copy of the completed SCR and appendices to the Iowa Department of Natural Resources, List Coordinator, Wallace Building, Des Moines, IA 50319 and one copy of the completed SCR and appendices to GAB Business Services, Inc. POB 3837, Des Moines, IA 50322. Additional information or clarification may be requested.

Monitoring results must be submitted in the format required by IDNR's Site Monitoring Report (SMR). A copy of the Site Monitoring Report will be provided after the SCR is approved.

#### B. Low Risk Site Correction: Action

Using only the monitoring wells which exceeded the IAC/MCL action level, MW-2 and MW-3, the volume was calculated. A 25' x 25' (625 ft<sup>2</sup>) area around MW-2 and a 10' x 10' (100 ft<sup>2</sup>) area was anticipated to be impacted around each well. A smaller radius of contamination was used around MW-3 because this is the first time benzene was detected above the action levels. The water column height of 4.99 feet (MW-2) and 7.22 feet (MW-3) was used to determine the impacted volume of water around each well by multiplying the water column height by the area and dividing by the conversion factor - 7.48 gal/ft<sup>3</sup>. Please refer to the following equation for the determination of contaminated groundwater volume.

$$\begin{aligned} & (\text{conc. of benzene} - \text{mg/L}) \times (\text{volume of contaminated groundwater} - \text{ft}^3) \times (7.48 \text{ gal/ft}^3) \\ & 1.785 \text{ L/gal} \times (0.8 \text{ kg/1000mg}) \times (2.25 \text{ lbs/kg}) \times (\text{density of gasoline} (\text{ft}^3/0.73 \text{ lbs})) \times 7.48 \text{ gal/ft}^3 = \\ & \text{volume of contaminated groundwater for a specific well} \end{aligned}$$

Volume of contaminated groundwater (MW-3) = 3.72 gallons

Volume of contaminated groundwater (MW-2) = 341.93 gallons

The total volume of contaminated groundwater equals 345.65 gallons.

XIV(B2) - BEST MANAGEMENT PRACTICE

1. Leak detection: Leak detection activities will not be implemented for the 500-gallon UST abandoned in place. All liquid material was removed from this tank by Marley Pump Company and sand was put into its place. The tank was closed during August 1987 - November 1987.

The new UST system has several leak detection monitors:

- Vapor probes in vapor monitoring wells - monitored by Red Jacket RLM 9000.
  - Liquid refraction sensor in the interstitial space monitored by Red Jacket RLM 9000.
  - Automatic tank gauging - P/N 4001955 with Red Jacket RLM 99000.
  - Cathodic protection internally and externally. Tests performed 2/93 and due in 2/96.
  - Secondary containment - sealed concrete pad and 4-inch concrete curbing.
2. Marley Pump Company uses all the leak detection monitors in conjunction with regularly scheduled cathodic protection checks and/or tank tightness tests as a precautionary measure. Furthermore, four monitoring wells will be used to detect impact to the groundwater.
  3. Any soil or groundwater sampling conducted by Marley Pump company and its consultant, will abide by a QA/QC document which follows or is more stringent than those required by the IDNR. Vapor analysis of confined spaces (the manhole located southwest of the facility or other openings accessible to conduct the vapor survey) will be conducted when on-site monitoring occurs.

**XIV(B3) - MONITORING PLAN**

As of the submittal of this report, the Marley Pump Company will re-sample MW-3 for petroleum constituents. During the first phase of groundwater sampling (October 1992) the benzene levels in MW-3 were non-detect. However, during the second phase of groundwater sampling, benzene was detected (0.0079 mg/l) above the IAC/MCL cleanup guidelines, 0.005 mg/l. Through this sampling round, Marley Pump company will justify whether this increase is an anomaly.

**Monitoring Plan** - Marley Pump Company's consultant will collect groundwater elevation data and groundwater samples from the four on-site monitoring wells. The elevation data will help determine the groundwater flow direction and if any directional changes occur due to seasonal changes in the groundwater elevation. These four wells are located in such a way that they are consistent with the current groundwater flow direction. Data from these sampling points will help determine whether impact is occurring to the subsurface. This data combined with the calculated hydraulic conductivities will aid in the determination of migration potential. If increases/decreases to the contaminant level occur and/or changes in the groundwater flow direction occur, then recommendations for change to the monitoring plan will be made accordingly.

The Marley Pump Company will follow the IDNR's proposed monitoring schedule as suggested in the SCR. However, Marley Pump Company reserves the right to request a reduction in monitoring frequency or reduction in the number of monitoring wells sampled if Marley Pump Company's request follows IDNR's justification requirement.

M&E proposes the following schedule to conduct groundwater monitoring.

| Year | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 |
|------|-----------|-----------|-----------|-----------|
| 1994 | NR        | X         | X         | X         |
| 1995 | NR        | X         | X         | X         |
| 1996 | NR        | X         | X         | X         |
| 1997 | NR        | X         |           | X         |
| 1998 | NR        | X         |           | X         |
| 1999 | NR        | X         |           | X         |

NR - Not required by IDNR.

The results will be reviewed annually and modifications to the monitoring plan will be recommended, if necessary.



TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

LARRY J. WILSON, DIRECTOR

September 23, 1993

Mr. Timothy Verhagen  
Marley Company  
1900 Shawnee Mission Parkway  
Mission Woods, KS 66205

SUBJECT : Petroleum Contamination - Request for Time Extension -  
Marley Pump Company, 1500 East 59th Street in Davenport, Iowa.  
Tank Registration No. 7910066 - LUST No. 8LTS84

Dear Mr. Best:

We have received the September 13, 1993 letter from you requesting a delay in the activity schedule at the referenced site. The request is granted.

Accordingly, the department will extend the due date for the Site Cleanup Report (SCR) until October 28, 1993. Please be aware that we may not be able to grant additional extensions for your schedule.

If you have questions, or we may be of assistance, please contact me at 515/281-6704.

Sincerely,

VERNE SCHRUNK  
ENVIRONMENTAL SPECIALIST  
UNDERGROUND STORAGE TANK SECTION

VKS:j

cc: Field Office 6  
GAB  
Denise Story, Metcalf & Eddy, 1 Pierce Place, Suite 1500 W,  
Itasca, IL 60143-2641

9-19-93

**MARLEY**

TIMOTHY J. VERKAGEN  
Vice President  
and  
Associate General Counsel

September 13, 1993

**VIA FACSIMILE TRANSMISSION AND  
FIRST CLASS MAIL**

Verne K. Schruink  
Environmental Specialist - UST Section  
State of Iowa - Dept. of Natural Resources  
Wallace State Office Building  
Des Moines, Iowa 50319

Re Site Cleanup Report - Marley Pump Company  
1500 East 59th Street, Davenport, IA  
Tank Registration No. 7910056 - LUST No. E1.TS84

Dear Mr. Schruink:

You may recall that in June 1993, you reviewed and commented on a draft Site Cleanup Report (SCR) on the above referenced Davenport UST site prepared by Metcalf & Eddy on behalf of Marley Pump Company (Marley). This is an old UST, abandoned in place a number of years ago, which may be the source of benzene contamination found while testing for a new UST installation at this location.

Because ninety days have passed since our receipt of your comments, Marley is obligated to provide you with a revised SCR which corrects the deficiencies cited in your review.

Please accept this letter as a request for an additional forty five (45) days to submit the revised SCR.

The reason for the delay in the preparation of a revised SCR is because Marley Pump Company and its parent, The Marley Company, has been sold to United Dominion Industries, Inc. headquartered in Charlotte, North Carolina. This transaction, valued at \$340 million, closed approximately three weeks ago.

Bob Best, who has been handling this UST matter, was let go in September 1992 as part of the pre-sale reorganization of the company. Since that time, the remaining personnel



Verne K. Schruck  
September 13, 1993  
Page 2

at Marley have been devoting all of their time to the consummation of this major corporate transaction.

I am sorry for the delay, and I commit to the Department that Marley now will stay on this project until its completion.

As you know, the level of benzene found at this site is confined to a small area and does not pose any threat to human health or the environment give the site's geological characteristics.

Marley is committed to fully satisfy the requirements of Iowa and the policies of the UST section and will hereafter move promptly in this regard.

Please respond to the undersigned at the address shown on this letterhead, with a copy to Denise Story, Metcalf & Eddy, 1 Pierce Place, Suite 1500 W., Itasca, IL 60143-2641 and to Dan Van Zuiden, Red Jacket Pumps, 500 East 59th St., Davenport, Iowa 52808.

I appreciate your patience and cooperation in this matter. If you have any questions, please feel free to call at any time.

Very truly yours,



Timothy J. Verhaagen

cc: C. Nelson  
D. Van Zuiden  
D. Story



TERRY E. BRANSTAD, GOVERNOR

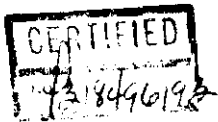
RECORD COPY

DEPARTMENT OF NATURAL RESOURCES

LARRY J. WILSON, DIRECTOR

CERTIFIED MAIL

June 1, 1993



Bob Best  
Marley Company  
1900 Shawnee Mission Parkway  
Mission Woods, KS 66205

SUBJECT: Site Cleanup Report Review - Marley Pump Company  
1500 East 56th Street, Davenport, IA  
Tank Registration No. 7910056 IUST No. 8LTS84

Dear Mr. Best:

The department has reviewed the Site Cleanup Report (SCR) for the referenced facility. DNR received the report February 16, 1993. The following comments provide the conclusions of our review and relate to both administrative/procedural and technical issues. We suggest discussing these items with your registered groundwater professional.

The SCR is unacceptable due to the following technical deficiencies. Correction of these deficiencies is required before a risk classification can be established:

SCR Section III - Soil Sampling Methods & Findings

1. The explanation provided concerning soil boring placement is a description, not a rationale as required by the SCR.
2. We have reservations as to the adequacy of the statement that no soil contamination exists at this site. Not enough data points have been provided, thus requiring excessive interpolation and estimation. MW-1 was twenty feet from the abandoned tank; this distance is certainly adequate for evaluating groundwater. However, the stratigraphy at this facility (silts and silty clays) would seem to warrant sampling within 5 feet of the abandoned tank around its perimeter and at some justifiable distance along the product line.

#### SCR Section IV - Groundwater Sampling Methods & Findings

3. A general rationale for placement of groundwater monitoring wells was not developed.
4. Clarification that groundwater levels were stabilized must be provided, otherwise the validity of the groundwater contour map is questionable.
5. The "triangular" arrangement of the groundwater monitoring wells is such that the internal angles of the "triangle" call in question whether the methodology applies. The three wells can almost be relegated to a straight line, which in turn calls into question the groundwater flow direction.
6. The explanation regarding the accuracy of the method used to determine groundwater levels is not responsive to the question.
7. Your consultant acknowledges the extent of groundwater contamination is not adequately defined. Consequently, further investigative work must be done to adequately define the groundwater contaminant plume and its transition zone.

#### SCR Section VII - Hydraulic Conductivity

8. Hydraulic Conductivity values were not provided in the appropriate units. The raw data and calculation to obtain the hydraulic conductivity values should be provided in an Appendix, but not in Appendix 14. Often this information is included as a separate Appendix or with the Cross Sections.

#### SCR Section VII - Receptor Survey

9. Item B of this section is not sufficiently discussed. If the registered groundwater professional believes these items are not pertinent, some such statement is required as well as a narrative discussion/reason/basis for that position in the appropriate Appendix. Documentation must be provided to verify utilities have or have not been impacted. This would include location and depth of utilities relative to the vertical and horizontal extent of soil and groundwater contamination along with some type of "on the ground" investigation of the utilities and their trenches (soil vapor survey and/or lab analyses of soil samples).
10. Maps presented for item B illustration need to be more carefully reproduced (be legible) with more care applied to titling the maps for correspondence with the narrative.
11. A determination and investigation of confined spaces, if present, must be accomplished.

#### SCR Section X - Tabulation of Analytical Data

12. Data from all previous investigation (Seneca "site check") must be included in the appropriate tables. Also, transposition from the lab data sheets to the table should be accurate.

#### SCR Section XIII - Risk Classification

13. Each point of the 14 Risk Classification criteria must be "answered" through a narrative which provides the rationale/justification/reasoned scientific basis for the "yes" or "no" answer your groundwater professional believes appropriate. This has not been done. Until such is provided, the risk classification cannot be determined.

#### SCR Section XIV - Corrective Action Response

14. None of the information required has been completed for either a high risk or low risk site. We acknowledge a classification cannot be made until an adequate evaluation for receptors (per the SCR methodology, and the extent of soil and groundwater contamination is made, thus allowing completion of this section of the SCR. DNR certainly agrees with the consultant's statement that proceeding to clean-up or monitoring without knowing the extent of soil and groundwater contamination is premature. Likewise, DNR cannot accept or approve an SCR until the appropriate items of the SCR are completed.

The SCR also contains administrative/procedural problems that do NOT require correction in this report. These items must be addressed by your registered groundwater professional in all future reports (this SCR resubmittal). These items include:

#### SCR Section I - Site History

1. Information regarding previous owners, dates of ownership, and site activities is incomplete and missing. Include information such as: when the land was purchased; when the USTs were installed, removed, used, etc. An explanation why the information is not included must be made or such information must be included. That explanation should include the efforts made to obtain this information.

## SCR Section II - Current Site Conditions

- 1) The "General Description of Site Geology" subsection should also contain information relevant to the geomorphic/physiographic setting in addition to a site specific stratigraphic description.
- 2) In describing "existing UST systems" mention should be made that the "out-of-service" UST is "abandoned-in-place" and filled with sand. Additionally, the narrative in Subsection D indicates additional USTs were/have been installed. These should be included in the table. If these systems are regulated, they must be registered with the DNR. Please contact Mary Kay Rogge at 515-261-8879 regarding questions and procedures for registering USTs and compliance with appropriate regulations.
- 3) The topographic map contour interval was not included.
- 4) The "Scaled Site Plan Map" was not of a scale required in the SCR. Information requested in the SCR was not included (location of abandoned product lines, existing product tank and line locations, tank contents and sizes). The DNR may accept maps scaled differently than stated if such a request is approved by DNR prior to submission of the SCR (please call to discuss such deviation). Also, after obtaining approval, the SCR must contain the justification for the change.
- 5) The "Scaled Site Vicinity Map" provided was not at an appropriate scale. The "neighborhood" to the West, North, and Northwest was not portrayed.

## SCR Section III - Soil Sampling Methods & Findings

- 7) For those investigations completed after March 1992, DNR is requiring the use of the DNR logging format (included in the SCR document, and the Unified Soil Classification System. Please refer to the SCR and include the necessary information.
- 8) Soil boring logs for all previous investigations must also be included in the SCR.
- 9) Water level information is also to be included for soil borings.
- 10) The statement regarding prevention of cross-contamination needs expansion to clarify procedures between each borehole installation and each sampling event (i.e., is decontamination done after each split-spoon is taken as well as between borings).
- 11) Calibration procedures are questionable and somewhat unclear. The narrative should be expanded. Isobutylene gas provides a numerical value other than zero.

SCR Section IV - Groundwater Sampling Methods & Findings

12. The monitoring well construction diagrams are not per the SCR document instructions (as with the soil boring logs).
13. Elaboration of "placed into the annular space of the hollow stem auger" is necessary regarding the method of installation of filter pack and seals. Placed how? By pouring from the bag, by dropping from a shovel, tremie pipe?
14. Groundwater & surface elevations are required to be Above Sea Level values unless previous approval not to comply with this designation is obtained from DNR.
15. Further elaboration/explanation regarding the benchmark used must be provided. Simply stating "a light pole" is not acceptable. Tying a point on the light pole to an established benchmark, telling DNR where the benchmark is, and illustrating the chosen benchmark on the topographic map is the acceptable/preferred method.
16. Each data point on the groundwater contour map must be labeled with the relevant ASL elevation value.

Within ninety (90) days from receipt of this letter, submit to the department a revised SCR that corrects the listed deficiencies. If you are unable to meet this schedule, please notify the department in writing with the reason for the delay and a firm date by which the department will receive the revised SCR.

In all correspondence regarding this project, please include the LUST NUMBER, which can be found in the SUBJECT portion of this letter. If you have questions regarding this matter or we may be of assistance, please contact Verne Schunk at 515/281-6704.

Sincerely,

*Verne Schunk*

VERNE F. SCHRUNK  
ENVIRONMENTAL SPECIALIST  
UNDERGROUND STORAGE TANK SECTION

VKS/vks/RS84SCR.REV

cc: Field Office 6

Metcalf & Eddy  
16207 W. 67th Street  
Kansas City, MO 64152  
attn: Denise Story

Best  
Moley Company  
1800 Shawnee Mission Parkway  
Mission Woods, KS 66205

Use only to receive the  
company return for an item

☐ Address only

☐ Payment only

☐ Payment and return

NAME ☐ NAME  
ADDRESS ☐ ADDRESS  
CITY ☐ CITY  
STATE ☐ STATE  
ZIP ☐ ZIP

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# SCR SUMMARY SHEET

(Sheet 1 of 2)

LIST # 1000

TANK REGISTRATION # 7910056

SITE NAME Triglofin Company

SITE ADDRESS 600 E. 50th Street, Davenport, Iowa

REVIEW DATE 4/28/82

REVIEWER And A Pradhan

## I. PLUME DEFINITION

A. SOIL (Circle) Defined ☐ Marginal ☐ Unacceptable ☒ N/A

Is additional work required? Yes ☐ No ☒

Reason: no soil sample was not detected.

B. GROUNDWATER Defined ☐ Marginal ☒ Unacceptable ☐ N/A

Is additional work required? Yes ☐ No ☒

Reason: no sample was taken in MW 2. There is no sampling point.

## II. RECEPTOR SURVEY

|                   | Adequate                            | Marginal                 | Unacceptable                        | N/A                      |
|-------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| A. SURFACE WATER  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| B. CONDUIT SURVEY | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| C. WELL SURVEY    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| D. BARRIER SURVEY | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Is additional work required? Yes ☒ No ☐

Reason: Sample was complete no sample of soil, water or air was taken.

## III. RISK JUSTIFICATION (Circle) Adequate ☐ Marginal ☐ Unacceptable ☒ N/A

Reason: no sample taken

## IV. RISK CLASSIFICATION (Circle) HIGH ☐ LOW ☒ NO ACTION

AGREE

DISAGREE

Reason: no sample taken



## V. SCR QUALITY (Circle)

Good

Marginal

(Poor)

Can it be accepted?

Yes

(No)

Reason:

This is an incomplete SCR with many deficiencies

## VI. BAT (circle)

Adequate

Marginal

Inadequate

N/A

Reason:

Description is vague

## VII. MONITORING PLAN (Circle)

Adequate

Marginal

Inadequate

N/A

Reason:

not specified

(Additional comments, if necessary)

**CHECKLIST  
FOR THE  
SITE CLEANUP REPORT (SCR)**

The following guidance document is used to evaluate Site Cleanup Reports submitted to the department for review. Additional comments are written, if necessary, in the margins referencing the area of concern.

The following questions, devised from the SCR document, are to be answered based on the information presented in the SCR. Responses may fall into the following categories.

Y Yes Information provided meets the qualifications as indicated or presents the correct information.

N No

1 Information is inadequate

2 Information is inaccurate

3 Information is missing

N/A not applicable

LIST NO. 2000-0000

FACILITY NAME CITY City of Chicago, 500 E 59th St., Downtown, Iowa

Date SCR received: 1/10/10

Date review initiated: 1/10/10

completed: 1/16/10

Reviewer (name): Paul J. P. H.

Comment Letter date: 1/16/10

HAS THE SITE CLEANUP REPORT (SCR) BEEN COMPLETED USING THE FORM OR PROMPT OR A FORMAT DESIGNATED BY THE DEPARTMENT?

YES

NO

# SITE CLEANUP REPORT CHECKLIST

## Title Page

Are the following entries correctly completed:

- |                                      |                |   |   |   |   |
|--------------------------------------|----------------|---|---|---|---|
| 1. UST Number                        | (Y)            | N | 1 | 2 | 3 |
| 2. UST Registration No.              | (Y)            | N | 1 | 2 | 3 |
| 3. Site Name                         | (Y)            | N | 1 | 2 | 3 |
| 4. Site Address (complete)           | (Y)            | N | 1 | 2 | 3 |
| 5. Responsible Party - Name          | (Y)            | N | 1 | 2 | 3 |
| 6. Resp. Party - Address (complete)  | (Y)            | N | 1 | 2 | 3 |
| 7. Submittal Date                    | (Y)            | N | 1 | 2 | 3 |
| 8. Site Risk Classification          | <del>(Y)</del> | N | 1 | 2 | 3 |
| 9. Name / Sign. of Groundwater Prof. | (Y)            | N | 1 | 2 | 3 |
| 10. Name / Sign. of Resp. Party      | (Y)            | N | 1 | 2 | 3 |

## Appendices Check-off Sheet

1. Appendices Check-Off Sheet be completed?  
Verify that all Appendices checked are in report. (Y) N 1 2 3

## I. Site History

Have the following been properly identified? (Verify thru UST database/written file)

- |                                                                                                                                                                                                                                              |     |   |   |   |   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|---|---|---|
| A. Date of petroleum release discovery                                                                                                                                                                                                       | (Y) | N | 1 | 2 | 3 |
| B. Date petroleum release reported to IDNR                                                                                                                                                                                                   | (Y) | N | 1 | 2 | 3 |
| C. Site Owner Chronology - all information must be provided with no chronological gaps (the listing should include all periods of time when petro products were used or sold at the site)<br><i>No per Hurley (1/14) data/in to included</i> | (Y) | N | 1 | 2 | 3 |
| D. Description of circumstances of the discovery of release                                                                                                                                                                                  | (Y) | N | 1 | 2 | 3 |
| E. Description of initial actions taken to abate release                                                                                                                                                                                     | (Y) | N | 1 | 2 | 3 |

## II. Current Site Conditions

Has sufficient information been provided on the following?

- A. General description of site geology *1. by regarding to geomorphic/physiographic features would be included in addition to site specific stratigraphic description.* Y N ② 2 3
- B. Description of all existing UST system(s) at site - active, out of service and abandoned in place. *None - No active UST indicated. 3 additional USTs were found by inspection. These should be depicted here (in sketch) should be made.* Y N 1 2 ③
- C. Verify whether tank / line tightness tests were required by the IDNR - file search required. *Yes, but not done. UST is now abandoned in place by filling and sealing.* Required

If required: Using a copy of the latest tank/line tightness test, complete Table II-C

• Appendix 1 - "Tank Line Tightness Testing Results"

- Is a complete copy of tank/line tightness test, N/A including all supporting data provided? Y N
- Is the method used approved by the DSEPA and/or the IDNR for the conditions and tanks located at the site? Has third party certification been provided? Y N
- Are the conclusions justified by data presented? *N/A* Y N 1 2 3
- Are explanations of testing anomalies provided? *N/A* Y N 1 2 3
- If corrective actions were initiated or repairs necessary, is a description of actions provided? *N/A* Y N 1 2 3

D. Topographic Site Map

- Appendix 2 - "II(D) Topographical Site Map" *(contour interval not indicated)*
- Is a legible topographical map, with contour interval less than or equal to 10 feet, provided showing the site and surrounding area? ② N
- E. Scaled Site Plan *scale of 1" = 50' was used*
- Appendix 3 - "II(E) Scaled Site Plan" *the site plan shows operating UST about which nothing was mentioned in Section II-B*
- Is a scaled site plan provided showing the site and immediate surrounding area? Y N ① 2 3
- Does the diagram provided show the location of all existing and removed USTs, product lines, and dispensers, and pertinent site features, such as, buildings, wells, waterways, Y N 1 ② 3

*This is an Operating UST system. The UST is located at the site, location, status of UST is noted.*

**F. Scaled Site Vicinity Map**

Are the names and addresses of owners whose property is or is likely to be affected by the movement of contamination provided? (Names provided must correspond to information on the "Scaled Site Vicinity Map")

Y N 1 2 3

**Appendix 4 - "II(F) - Scaled Site Vicinity Map"**

Is a completed scaled site map (1" = 200 to 500 ft) provided showing general area features and locations of adjacent properties which are or may be affected by contamination movement?

Y N 1 2 3

Does the map provided show all pertinent site features, including locations of buildings, roads, waterways, sinkholes, etc.?

Y N 1 2 3

**III. Soil Sampling Methods & Findings**

**A. Boring number and placement** - Has a reasoned explanation been given to justify the number and placement of soil borings.

Does the rationale for borehole placement allow for sufficient information to be collected to determine the vertical and horizontal extent of contamination and the transition zone(s) between areas that are and are not contaminated.

Y N 1 2 3

Is the rationale justified based on engineering, geologic, or hydrogeologic principles.

Y N 1 2 3

**B. Soil Boring Logs**

**Appendix 5 - "IIIB - DNR Form 542-1392 or equivalent: Soil Boring Logs"**

Is a separate soil boring log provided for each borehole placed?

Y N 1 2 3

Are the boring logs completed with the information as required on DNR form 542-1392?

Y N 1 2 3

Is at least one (1) water level observation recorded with time, date and water elevation (ft) for each boring log?

Water level data were not indicated for each boring log.

- C. Prevention of cross-contamination: Are the actions taken sufficient to prevent cross-contamination between borings during installation and sampling procedures? *Subsides, and not regarding urban plan cleaning (i.e. between each boring run)*

Y N ☒ 2 3

- D. Vapor Equipment: Has a list been provided itemizing various vapor equipment used (if any), description of its use and an evaluation of the conclusions drawn from the vapor results and calibration procedures?

(Y) N 1 2 3

Calibration chart - Are daily calibration measurements noted for each vapor instrument used?

(Y) N

- E. Soil sample collection: Has a description been provided of soil sample collection methods and a reason for its use in obtaining representative samples.

(Y) N 1 2 3

At a minimum, were soil samples collected at 5 foot intervals or at points indicated by high vapor readings

(Y) N 1 2 3

- F. Soil Contamination Plume Map(s)

- Appendix 6 - "IIINR - Soil Contamination Plume Maps"

*no soil contamination was detected*

Do the soil contamination plume maps depict the full extent of vadose zone soils which exceed the IDNR corrective action limit of 100 ppm total organic hydrocarbons?

Y ☒ N 1 2 3

Are the maps adequately labelled with each boring numbered and soil contamination concentration for each boring noted?

(Y) N 1 2 3

Based on the location of soil borings and the boring depth provided, are the limits of contamination identified justified by scientific principles?

Y ☒ N 1 2 3

Have the borings used to determine hydraulic conductivity been identified?

(Y) " 1 2 3

#### IV. Groundwater Sampling Methods & Findings

Effectiveness of boring placement  
in groundwater collection  
not made.

- A. Boring number & placement: Is a reasoned explanation given to justify the number and placement of groundwater monitoring wells?

Y N 1 2 3

Does the rationale for monitoring well placement allow for sufficient information to be collected to determine the vertical and horizontal extent of contamination, site stratigraphy, and the transition zone between areas that are and are not contaminated.

Y (N) 1 2 3

Is the rationale justified based on engineering, geologic, or hydrogeologic principles.

(X) (N) 1 2 3

#### B. Monitoring Well Construction Diagrams

Appendix 7 - IV(B) - Monitoring Well Construction Diagrams

Is there a separate monitoring well construction diagram completed for each well installed at the site and in the general area?

(Y) N 1 2 3

Do the monitoring well construction diagrams provide sufficient information regarding the construction of each well (See Section IV-C)?

(Y) N 1 2 3

Are water level observations recorded that verify a stabilized level? Has the well been allowed to stabilize?

(Y) N 1 2 3

Is the static water level indicated with the symbol " " ?

(Y) (N) 1 2 3

Is the static water level within the screened interval of the monitoring well?

(Y) N (X) 1 2 3

#### C. Description of Permanent Monitoring Well Construction

Are the following aspects of the well construction provided in a clear and concise description?

- (1) method of cleaning well components prior to installation
- (2) casing and screen material, incl. diameter and length
- (3) screen slot size
- (4) method used to install casings
- (5) method used to install filter pack and seals
- (6) actions taken to prevent cross-contamination of wells during construction and sampling
- (7) procedures to develop monitoring wells

Y N 1 2 3

- D. **Temporary Monitoring Wells:** Has a description or explanation been provided describing the type and use of temporary casing and screens in the boreholes used as temporary wells?

N/A. However, no response was provided.

Y N 1 2 3

Is an adequate explanation and justification provided on the procedures used to develop the well to ensure a representative groundwater sample?

Y N 1 2 3

- E. Has an adequate explanation and justification been provided for determining the adequacy of the groundwater sampling and well purging methods?

Y N 1 2 3

- F. **Groundwater Data for Contour Map Development:** Is a table provided which indicates, at minimum, the following information?

groundwater & ground surface levels were not expressed as AGL elevations.

1. Well/Boring number
2. Date measured
3. Static Water Level (AGL) - nearest 0.01 ft
4. Water level correction for Free Product, if required
5. Ground Surface Elevation - nearest 0.1 ft

Y N 1 2 3

If the water level was corrected due to presence of free product, was a statement provided describing the correction method?

N/A

Y N 1 2 3

Has a description of the benchmark used to survey for groundwater surface elevations been provided?

Need more precise description than a light pole

Y N 1 2 3

Is the benchmark used tied in to a USGS or other geodetic datum?

Y N 1 2 3

G. **Groundwater Contour Map**

- \* Appendix A "IVIG" Groundwater Contour Map

Not enough data points to construct contour map. Monitor flow direction. OK

Does the Groundwater Contour Map provide information as to monitoring well locations, ~~groundwater~~ elevation points, groundwater contour intervals, and groundwater flow direction (noted with an arrow)?

Y N 1 2 3

Are the wells used to determine hydraulic conductivity identified on the map?

Y N 1 2 3

If necessary, are separate groundwater contour maps provided to describe groundwater movement and flow direction in different aquifers?

N/A

Y N 1 2 3



**II. Has a description and explanation been provided on:**

- |                                                                                                                                 |     |   |   |   |   |   |
|---------------------------------------------------------------------------------------------------------------------------------|-----|---|---|---|---|---|
| 1. the methodology and device used to determine static groundwater levels - identify instrument used.                           | (Y) | N | 1 | 2 | 3 |   |
| 2. the accuracy of the method used to determine groundwater levels, in the case of a report of the accuracy of the method used. | (Y) | N | 1 | 2 | 3 |   |
| 3. anomalous groundwater flows and/or water levels.                                                                             | N/A | Y | N | 1 | 2 | 3 |
| 4. fluctuations in water levels, with special emphasis on those which may alter groundwater flow directions.                    | N/A | Y | N | 1 | 2 | 3 |

**I. Groundwater Contamination Plume Maps**

- Appendix 9 - "IV(I) - Groundwater Contamination Plume Maps"

Do the groundwater contamination plume map(s) depict the full extent of free phase product and dissolved phase contamination exceeding the department's groundwater corrective action limits and are the iso-concentrations of groundwater contaminants noted within the plume?

Y (N) 1 2 3

If necessary, is a separate groundwater contamination plume map provided for each contaminant which exceeds the IDNR's corrective action limits?

Y (N) 1 2 3

Is each data point adequately labelled as to MW # and contaminant concentration?

(Y) (N) 1 2 3

If applicable, is a map provided which depicts the full extent of free product and depth of product?

N/A Y (N) 1 2 3

Based on the number and location of data points/monitoring wells provided, are the diagrammed limits of contamination justified?

Y (N) 1 2 3

Has the "transition zone" between adequately defined?

Y (N) 1 2 3

**V. Sampling Quality Control**

- Has a statement been provided that indicates that the QC/QA procedures used are at least as stringent as those of the IDNR's LUST QC/QA plan.

(Y) (N) 1 2 3

**VI. Hydrogeologic Cross Sections**

Diagrams\*

FGS is not unified soil class notation.

Are the Hydrogeologic Cross-Sections or three-dimensional diagrams stratigraphically correct as interpreted from the soil boring logs?

(Y) N 1 2 3

Do the cross-section diagrams provide detail of the following:

1. Identification of types and characteristics of the geologic materials present?

(X) N 1 2 3

2. Identification of contact zones between different geological materials, noting areas of high permeability and/or fracture?

(Y) N 1 2 3

3. Location of boreholes, noting depth of termination and zone of saturation?

(Y) N 1 2 3

VII. Hydraulic Conductivity

A. Has the hydraulic conductivity been determined?

(X) N 1 2 3

Has a statement been made identifying which boring(s) and/or wells were used to determine the hydraulic conductivity?

(Y) N 1 2 3

Have the data and calculations used to determine hydraulic conductivity been provided?

Y (N) 1 2 3

B. Has the method used to determine hydraulic conductivity been identified?

(Y) N 1 2 3

C. If an equivalent method (other than the Bouwer-Rice method in saturated soils or the Guelph permeameter in unsaturated soils) was used, was the accuracy and appropriateness evaluated?

Y N 1 2 3

D. Has an explanation been provided on why the location/number of data points used for determining hydraulic conductivity is representative of the conductivity at the site?

(Y) N 1 2 3

VIII. Receptor Survey Map(s)

- A. Has a map been provided, with an appropriate scale to adequately show all surface water bodies within 1000 feet of the petroleum contaminated area?

(Y) N

Has the potential impact to the surface water been adequately investigated?

(Y) N 1 2 3

If water samples and/or soil samples have been collected, has a statement been provided on sample collection and analysis methods? *r/a*

Y N 1 2 3

Has a narrative summary been provided to evaluate the potential for hydrogeological connections between the contamination and the surface water?

(Y) N 1 2 3

- B. Has a map been provided, with an appropriate scale to adequately show all utility conduits within 200 feet of the petroleum contaminated area?

Y (N)

Has the potential impact to the conduits been adequately investigated?

Y (N) 1 2 3

Has a detailed statement of investigation procedures been provided, which should include identification of all soil and or vapor sample locations?

Y (N) 1 2 3

Has a narrative summary been provided on the investigations conducted to determine if the vapors are present in confined spaces and/or in occupied structures?

Y (N) 1 2 3

Has a narrative summary been provided to evaluate the potential for hydrogeological connections between the contamination and the conduits?

Y (N) 1 2 3

Has a tabulation of all conduits and confined spaces been provided, which identify the type of conduit or confined space, conduit backfill material, slope of conduit and trench, and relationship to groundwater level?

Y (N) 1 2 3

- C. Are the locations of all active, abandoned, and plugged groundwater wells within 1000 feet of the petroleum contaminated area provided?

Y N 1 2 3

Are copies of available well logs and the names and addresses of well owners provided for identified wells within 1000 feet of the contaminated area?

Y (N) 1 2 3

They did not provide a definite information about rule of  
Structures at Barrow, if any.

- D. Has a narrative summary been provided to evaluate any potential groundwater barriers (i.e. foundations, structures, parking lots, roads, etc.) which may have an impact on the movement of contamination?

Y N (1) 2 3

Has a explanation been provided on the significance the identified barriers as related to the hydrogeologic conditions present at the site?

Y N (1) 2 3

## IX. Health & Safety Plan

Has a certification been presented which verifies that the On-Site Health & Safety plan conforms to applicable OSHA requirements?

Y N

## I. Tabulation of Analytical Data

- A. Soil Analytical Data Information: has the table on page 15 been completed using the soil sample analytical data obtained during this and all previous investigations for each soil boring or MW?

Y N 1 (2) 3

- B. Groundwater Analytical Data Information: has the table on page 15 been completed using the groundwater analytical data obtained during this and all previous investigations. The list should be chronological and list each well sequentially. Information required includes:

Y N 1 2 (3)

- C. Do the tables provided and the laboratory data sheets (Appendix 12) agree?

Y N 1 2 (3)

- \* Appendix 12 - "X - Laboratory Data Sheets"

Have copies of All analytical data sheets been provided?

Y N 1 2 (3)

## II. Free Product

- A. Has free product been identified at the site?

Y (N)

- B. If yes, the date indicated when the "Free Product

1-4/1 N

- C. Is a narrative provided which discusses the status and effectiveness of the free product removal system in relation to the hydrogeologic conditions at the site?

Y N 1 2 3

### XII. Contamination Source

- A. Has the source of contamination at the site been identified?

(Y) N 1 2 3

- \* Appendix 13 - "XII(B) - Off-Site Contamination Source Support Data"

Has sufficient evidence, including analytical data and maps showing potential off-site sources and groundwater flow direction, been provided to justify the conclusion that the contamination at this site is due to an off-site source?

N/A

Y N 1 2 3

### XIII. SITE RISK CLASSIFICATION

Questions for evaluating if an adequate investigation has been completed to properly determine site risk classification. Justification MUST be provided, for each response, in Appendix 14.

#### A. JUSTIFICATION FOR HIGH RISK

##### 1. Benzene in occupied structures:

- a. File review: Are there documented reports of fumes or vapors in occupied structures in the immediate area?

Y N

- b. If yes, has an adequate investigation taken place to determine if the TLV-TWA for benzene in occupied structures exceeds or is likely to exceed 10 ppm in an 8 hour period?

Y N 1 2 3

- c. If yes, is the method of analysis and all supporting laboratory data provided?

Y N 1 2 3

- d. Has an appropriate justification been provided to determine risk classification?

Y N 1 2 3

##### 2. Combustible Gases in confined spaces:

- a. File review: Are there documented reports of fumes or vapors in structures, basements, sewers, utility conduits or any other confined space in the immediate area?

Y N

- b. If yes, has an adequate investigation taken place to determine if the concentration of combustible gases exceeds or is likely to exceed 10% of the LEL?

Y N 1 2 3

|    |                                                                                                                                                                                                             |   |   |   |   |   |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|
| c  | If yes, is the method and instrument used for analysis identified?                                                                                                                                          | Y | N | 1 | 2 | 3 |
| d. | Has an appropriate investigation been performed to evaluate the potential of combustible gases to collect in confined spaces such as petrol in contaminated areas?                                          | Y | N | 1 | 2 | 3 |
| e  | Surface water criteria:                                                                                                                                                                                     |   |   |   |   |   |
| a  | File review: Are there documented reports of surface water quality violations suspected to be from the petroleum contamination at this site?                                                                | Y | N |   |   |   |
| b  | If yes, has an adequate investigation taken place to determine if the contamination at this site exceeds or is likely to exceed the water quality standards contained in Subrule 567-61.3(455B) of the IAC? | Y | N | 1 | 2 | 3 |
| c  | Has an appropriate investigation been performed to evaluate the potential of contamination migration to exceed the water quality criteria standards outlined in Subrule 567-61.3(455B) of the IAC?          | Y | N | 1 | 2 | 3 |
| 4  | PVC Drinking Water Line:                                                                                                                                                                                    |   |   |   |   |   |
| a  | File review: Have there been any reports indicating that soil contamination may be in contact with a utility trench containing a PVC drinking water line in the area of petroleum contamination?            | Y | N |   |   |   |
| b  | Has an adequate investigation been conducted to determine the extent of soil contamination which exceeds the corrective action limit in the vicinity of the PVC line?                                       | Y | N | 1 | 2 | 3 |
| c  | Is the rationale for the response indicated (High risk or No) supported by maps and analytical data?                                                                                                        | Y | N | 1 | 2 | 3 |
|    | Utility trenches:                                                                                                                                                                                           |   |   |   |   |   |
| a  | File review: Have there been any reports indicating that contamination which exceeds the corrective action limit is in contact with a utility trench?                                                       | Y | N |   |   |   |
| b  | Has an adequate investigation been conducted to determine the extent of soil and/or groundwater contamination which exceeds the corrective action limit in the vicinity of the utility conduits?            | Y | N | 1 | 2 | 3 |
| c  | Is the rationale for the response indicated (High risk or No) supported by maps and analytical data?                                                                                                        | Y | N | 1 | 2 | 3 |

**6. Damage to utility conduits or structures:**

- a. Site review: Have there been any reports indicating that contamination is present at concentrations which is causing or is likely to cause physical damage to a utility conduit or structure? Y N
- b. Is the rationale for the response indicated (High risk or No) supported by maps and analytical data? Y N 1 2 3

**7. Soil contamination (above CAL) within 1000 ft of an active well:**

- a. Is the rationale for the response indicated (High risk or No) supported by maps and analytical data? Y N 1 2 3
- b. Does the rationale provided outline sufficient evidence to justify the response indicated? Y N 1 3 3
- c. If classified as High Risk, has evidence been provided to justify that the site be reclassified as Low Risk? Y N 2 2 3

**8. Soil contamination (above CAL) in contact with protected groundwater source:**

- a. Has the seasonal high water table been identified? Y N 1 2 3
- b. Has evidence (analytical data and/or hydraulic conductivity data) been provided to indicate if the groundwater is a protected water source? Y N 1 2 3
- c. Is the impacted groundwater aquifer a protected groundwater source? Y N N/A
- d. Is there sufficient evidence to justify the response indicated (i.e. High Risk or No)? Y N 1 2 3
- e. Is the rationale for the response indicated (High risk or No) supported by maps and analytical data? Y N 1 2 3

**9. Karst topography or area of fractured limestone:**

- a. Based on site or areal geology, is this contamination zone located within an area of fractured carbonate bedrock or in an area of karst topography? Y N 1 2 3
- b. If yes, is the site classified as high risk? Y N 1 2 3
- c. Has documentation been provided to indicate that this site may be reclassified as Low Risk based on the factors outlined on page 17 of 20, Section A., no. 9? Y N 1 2 3

10. Private or public water supply:

- a. Are there any active public or private groundwater wells located within 1000 ft of the petroleum contaminated area (see Appendix 11)? Y N 1 2 3
- b. Has a public or private water well been or is likely to be impacted by contamination to the extent that an MCL is exceeded, or in the absence of an MCL, and Action Limit is exceeded? Y N 1 2 3

11. Protected groundwater source:

- a. Has the groundwater at the site been impacted by contamination to the degree that an MCL or action level has been exceeded? Y N 1 2 3
- b. Has the groundwater been defined as a protected groundwater source? Y N 1 2 3
- c. If no to (b), has sufficient evidence, including analytical data (i.e., TDS), been provided to support conclusion? Y N 1 2 3

12. Man-made structures:

- a. Are there any natural or man-made conduits located within 100 ft of the petroleum contaminated area which could allow the vertical or horizontal migration of petroleum contamination to a protected groundwater source (ref. Appendix 11)? Y N 1 2 3

13. Public or private water source:

- a. Is the petroleum contaminated area within 1000 ft of an active public or private water supply (ref. Appendix 11)? Y N 1 2 3
- b. If classified as High Risk, has evidence been provided to justify that the site be reclassified as Low Risk? Y N 1 2 3

14. Material separating groundwater source from contamination:

- a. Is there a minimum of three meters of uncontaminated soil, free of discontinuities, with a hydraulic conductivity of less than or equal to 10<sup>-10</sup> between the contamination zone and a protected groundwater source or a groundwater source and a public or private water source? Y N 1 2 3

Is the site Low Risk?

Yes No

Y N



- c. If yes to (a), has sufficient evidence been provided to support the statement? Y N 1 2 3
- d. If classified as High Risk, has evidence been provided to justify that the site be reclassified as Low Risk? Y N 1 2 3

**B. LOW RISK SITE CONDITIONS**

1. Does the soil TOH concentration exceed 100 mg/Kg or does the groundwater contaminant concentration exceed the MCL or an Action Limit? *Yes* (Y) N
2. If yes to 1, do High Risk conditions exist at the site? Y N 1 2 3
3. Do High Risk conditions #7, 9, 13, and/or 14 exist at the site? *NO* (N) Y N
4. If yes to 3, has sufficient evidence been provided to support conclusions to reclassify as low risk? Y N 1 2 3

**C. No Action Required Site Conditions**

Does the SCR show that soil TOH concentrations are equal to or less than an MCL and that the groundwater contamination is equal to or less than an MCL or in the absence of an MCL, are equal to or less than an action level and high risk or low risk conditions do not exist and are not likely to occur?

Y (N) 1 2 3

Do HIGH or LOW Risk conditions exist at the site?

(Y) N 1 2 3

**III. Corrective Action Response**

*They prepared low risk booklet*

**A. High Risk Site Corrective Action Recommendations**

1. Have the following been identified for the petroleum contaminated area:
- a. Vadose zone soil contamination? Y N 1 2 3
- b. If yes to 1a, has the approx. volume of contaminated soil been determined? Y N 1 2 3
- c. Dissolved phase petroleum product in the groundwater? Y N 1 2 3
- d. If yes to 1c, has the approx. volume of contaminated groundwater been determined? Y N 1 2 3

- |    |                                                                        |   |   |   |   |   |
|----|------------------------------------------------------------------------|---|---|---|---|---|
| e. | Free phase petroleum product present?                                  | Y | N | 1 | 2 | 3 |
| f. | If yes to 1e., has the approx. volume of free product been determined? | Y | N | 1 | 2 | 3 |
| 2. | Have at least two (2) applicable treatment technologies been proposed? | Y | N | 1 | 2 | 3 |

Appendix 15 - "XIV (A3) - Treatment Technology Evaluation"

- a. For each applicable treatment technology (minimum 2), has each of the following been identified and/or evaluated?

- |    |                                                                        |   |   |   |   |   |
|----|------------------------------------------------------------------------|---|---|---|---|---|
| 1. | Identification of treatment technology                                 |   |   |   |   |   |
| 2. | Treatment method effectiveness                                         |   |   |   |   |   |
| 3. | Reliability                                                            |   |   |   |   |   |
| 4. | Site characteristics                                                   |   |   |   |   |   |
| 5. | Environmental, public health, and safety benefits and/or disadvantages |   |   |   |   |   |
| 6. | Costs                                                                  | Y | N | 1 | 2 | 3 |

4. Appendix 16 - "XIV (A4) - Best Available Technology (BAT)"

|                              |   |   |   |   |   |
|------------------------------|---|---|---|---|---|
| Has the BAT been identified? | Y | N | 1 | 2 | 3 |
|------------------------------|---|---|---|---|---|

|                                                                                                                  |   |   |   |   |   |
|------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|
| Has a in-depth evaluation, detailed justification, and explanation for selection of the treatment been provided? | Y | N | 1 | 2 | 3 |
|------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|

B. Low Risk Site Corrective Action Recommendations

1. Have the following been identified for the petroleum contaminated area:

- |    |                                                                                    |   |              |   |   |   |
|----|------------------------------------------------------------------------------------|---|--------------|---|---|---|
| a. | Valuable zone soil contamination?                                                  | Y | <del>N</del> | 1 | 2 | 3 |
| b. | If yes to 1a., has the approx. volume of contaminated soil been determined?        | Y | N            | 1 | 2 | 3 |
| c. | Dissolved phase petroleum product in the groundwater?                              | Y | N            | 1 | 2 | 3 |
| d. | If yes to 1c., has the approx. volume of contaminated groundwater been determined? | Y | N            | 1 | 2 | 3 |
| e. | Free phase petroleum product present                                               | Y | N            | 1 | 2 | 3 |
| f. | If yes to 1e., has the approx. volume of free product been determined?             | Y | N            | 1 | 2 | 3 |

Appendix 17 - "XIV (b2) - Best Management Practice"

Has a detailed "Best Management Practice" plan been provided which discusses the items listed on Page 20 of 20 of the SCR format, Section B(2)?

Y ☒ N ☐ 1 ☐ 2 ☐ 3

Appendix 18 - "XIV (B3) - Monitoring Plan"

Has a monitoring plan been provided which outlines the number and locations of monitoring sites, and is the plan consistent with expected contamination migration patterns?

Y ☒ N ☐ 1 ☐ 2 ☐ 3

If soil contamination only, does the Monitoring Plan and Best Management Practice allow for the determination of the following:

- 1) movement of soil contamination?
- 2) a measurable decrease or increase of contaminant levels in the soil? <sup>NA</sup>
- 3) an impact to the groundwater?

Y ☐ N ☐ 1 ☐ 2 ☐ 3

Does the monitoring plan meet the frequency recommended?

Y ☒ N ☐

Additional Comments:

It is an incomplete SCR. Neither field work nor data have been provided. Remedial action plan and justification, plume definition are all incomplete and unacceptable.

267584

**MARLEY**

February 15, 1993

TIMOTHY J. VERHAGEN  
Vice President  
and  
Associate General Counsel

**VIA FEDERAL EXPRESS**

Iowa Department of Natural Resources  
Underground Storage Area Section  
Wallace State Office Building  
Des Moines, Iowa 50319

Attn: Ms. Becky Schweite  
  
Re: Marley Pump Company  
Davenport, Iowa  
UST - Site Completion Report

Enclosed find a copy of the completed Iowa Department of Natural Resources Leaking Underground Storage Tank Site Cleanup Report for the Marley Pump (Red Jacket) site located at 500 East 59th Street, Davenport, Iowa.

This report was completed by Metcalf & Eddy on December 8, 1992 and was received by the undersigned at The Marley Company on December 10, 1992. Today, in discussions between Davenport personnel and this office, I learned that the report had not yet been submitted to your office. In reviewing the file to determine the status of this matter, it became apparent that the report was not forwarded to you on December 10th because of the misunderstanding (on my part) that a duplicate copy had been sent directly to you by Metcalf & Eddy.

I apologize to IDNR for the delay in the submission of the enclosure.

If you have any questions regarding the above, please give me call at your convenience.

Very truly yours,



Timothy J. Verhagen

cc: Dan VanZuiden - Davenport  
C. Nelson - Davenport  
D. Story - Metcalf & Eddy  
L. Donahue - Marley

cc: letter to IDNR 2/15/93

(COPY) 8LTS84

## IOWA DEPARTMENT OF NATURAL RESOURCES

\*\*\* IMPORTANT: READ ALL INSTRUCTIONS BEFORE COMPLETING \*\*\*

## Leaking Underground Storage Tank Site Cleanup Report (SCR)

## SITE IDENTIFICATION

LUST No: 6LTS84

UST Registration Number: 7910056

|               |                         |
|---------------|-------------------------|
| Site Name:    | THE HARLEY PUMP COMPANY |
| Site Address: | 500 E. 59TH STREET      |
| City:         | DAVENPORT               |

## RESPONSIBLE PARTY IDENTIFICATION

|         |                         |           |       |
|---------|-------------------------|-----------|-------|
| Name:   | THE HARLEY PUMP COMPANY |           |       |
| Street: | 500 E 59TH STREET       |           |       |
| City:   | DAVENPORT               | State:    | IA    |
|         |                         | Zip Code: | 52808 |

Submission Date: 12/1/84

SITE RISK CLASSIFICATION (mark one): ☐ HIGH RISK ☒ LOW RISK ☐ NO RISK

## STATEMENT OF CERTIFICATION

The below named certify that this document, appendices and attachments satisfy the Site Cleanup Report requirements of Chapter 567-135(455b) of the Iowa Administrative Code and all other applicable state, federal and local requirements.

MICHAEL M. KATZMAN #1061  
 Print the Name of Registered Groundwater Professional  
Michael M. Katzman  
 Signature - Registered Groundwater Professional

Timothy J. VERHAGEN  
 Print the Name of Responsible Party  
Tim J. Verhagen  
 Signature - Responsible Party

## Official DNR Use Only

|                |  |                |  |
|----------------|--|----------------|--|
| Date Received: |  | Comment Date:  |  |
| Reviewer:      |  | Comment Date:  |  |
| Date Reviewed: |  | Approved Date: |  |

## APPENDICES CHECK-OFF SHEET

Check the box to indicate the appendix is attached. Attach the appendices to the end of the SCR in the order listed.

- ☐ Appendix 1 "H(C) - Tank & Line Tightness Testing Results"  
Copies of all results, supporting field data, and the third party evaluation of the leak detection system. Explain the cause of testing anomalies and discuss any corrective action or repairs made to the system. Label as H(C) - Tank & Line Tightness Testing Results.
- ☒ Appendix 2 "H(D) - Topographical Site Map"  
Topographic map of the site and surrounding area. Label as H(D) - Topographical Site Map.
- ☒ Appendix 3 "H(E) - Scaled Site Plan"  
Map showing the site and immediate surrounding area. Label as H(E) - Scaled Site Plan.
- ☒ Appendix 4 "H(F) - Scaled Site Vicinity Map"  
Map showing the site in relation to general area features and the locations of properties adjacent to the site affected by the petroleum contamination or with potential to be affected as a result of contamination movement. Label as H(F) - Scaled Site Vicinity Map.
- ☒ Appendix 5 "H(G) - DNR Form 542-1392, Soil Boring Logs"  
Completed DNR form 542-1392 for each soil boring at the site. Label as H(G) - Soil Boring Log.
- ☒ Appendix 6 "H(H) - Soil Contamination Plume Map"  
Soil contamination plume map depicting the full extent of vadose zone soils exceeding the soil contamination corrective action levels. Label as H(H) - Soil Contamination Plume Map.
- ☒ Appendix 7 "IV(B) - DNR Form 542-1392, Monitoring Well Construction Diagram"  
Completed DNR form 542-1392 for each monitoring well at the site. Label as IV(B) - Monitoring Well Construction Diagram.
- ☒ Appendix 8 "IV(G) - Groundwater Contour Map"  
Groundwater contour map based on work done at the site. Label as IV(G) - Groundwater Contour Map.
- ☒ Appendix 9 "IV(I) - Groundwater Contamination Plume Maps"  
Groundwater contamination plume maps depicting the full extent of free phase product and dissolved phase contamination exceeding the groundwater corrective action levels under 135.7(b) and the levels of groundwater contamination within the plume. Label as IV(I) - Groundwater Contamination Plume Map.
- ☐ Appendix 10 "VI - Hydrogeological Cross-Section Diagram"  
Stratigraphically correlated hydrogeologic cross-section or three-dimensional diagram which adequately defines the spatial relationships of subsurface materials at the site. Label as VI - Hydrogeological Cross-Section Diagram.

☒ Appendix 11 "VIII - Receptor Survey Map"

Site area map with the results of the following receptor surveys illustrated:

- 1) Surface Water Body Survey. Location of surface water bodies (i.e., lakes, ponds, rivers, streams, etc.) within 1,000 feet of the petroleum contamination and evaluation of the potential for there to be a hydrogeological connection between the contamination and surface water.
- 2) Conduits Survey. Location of utility and natural conduits and confined spaces within 200 feet of the petroleum contamination and the results of investigations to determine the potential for the conduits to act as a pathway for vapors and product.
- 3) Groundwater Well Survey. Location of active, abandoned and plugged groundwater wells within 1,000 feet of the petroleum release.
- 4) Groundwater Barriers Survey. Locations of barriers and an explanation of their significance to contamination movement.

Label as VIII - Receptor Survey. Title survey narratives with the headings above.

☐ Appendix 12 "X - Laboratory Data Sheets"

Copies of laboratory data sheets. Label as X - Laboratory Data Sheets.

☒ Appendix 13 "XIII(B) - Off-Site Contamination Source Support Data"

Data to support allegations of off-site contamination sources impacting the site. Label as XIII(B) - Off-site Contamination Source Support Data.

☒ Appendix 14 "XIII - Site Risk Classification Justification"

Justification of risk classification. Label as XIII - Site Risk Classification Justification.

☐ Appendix 15 "XIV(A3) - Treatment Technology Evaluation" High Risk Sites Only

Evaluation of treatment technologies. Label as XIV(A3) - Treatment Technology Evaluation.

☒ Appendix 16 "XIV(A4) - Best Available Technology (BAT)" High Risk Sites Only

Identification of the best available treatment technology. Label as XIV(A4) - Best Available Technology (BAT).

☒ Appendix 17 "XIV(B2) - Best Management Practices" Low Risk Sites Only

Detailed best management practices plan. Label as XIV(B2) - Best Management Practices.

☒ Appendix 18 "XIV(B3) - Monitoring Plan" Low Risk Sites Only

Monitoring plan that will ensure any significant increase in contamination concentration or movement is detected. Label as XIV(B3) - Monitoring Plan.

## \*\*\* IMPORTANT: READ ALL INSTRUCTIONS BEFORE COMPLETING \*\*\*

## I. Site History

(CONFINE YOUR ANSWER TO THE SPACE PROVIDED UNLESS OTHERWISE NOTED)

A. Date the petroleum release was discovered: (mm/dd/yy) MARCH 18, 1992 (03/18/92)

B. Date the petroleum release was reported to DNR: (mm/dd/yy) APRIL 3, 1992 (04/03/92)

## C. Site Owner Chronology

This Page May Be Photocopied for Additional Site History

Provide a chronological summary of past and present site and tank owners and operational history. Begin with the present and work backwards. Include all products of these petroleum products have been stored, used or sold on site. List the current mailing addresses of all previous owners and tank operators. List written contracts or agreements between land owners, real estate owners and tank operators. In the "SITE ACTIVITY" row, list number, capacity, and contents of past and present tanks, previous releases and tank closures.

| DATE                                             | Event                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                              |                                        |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|----------------------------------------|
| LAND<br>OWNER NAME<br>AND ADDRESS                | THE HARLEY PAUL CO.<br>500 E. 59 STREET<br>DENVER, IOWA 52008                                                                                                                                                                                                                                                                                                                                                                                                     |                              |                                        |
| REAL ESTATE<br>OWNER NAME<br>AND ADDRESS         | THE HARLEY PAUL CO.<br>500 E. 59th STREET<br>DENVER, IOWA 52008                                                                                                                                                                                                                                                                                                                                                                                                   |                              |                                        |
| OPERATOR<br>NAME<br>AND ADDRESS                  | THE HARLEY PAUL CO.<br>500 E. 59th STREET<br>DENVER, IOWA 52008                                                                                                                                                                                                                                                                                                                                                                                                   |                              |                                        |
| CONTRACT<br>AGREEMENTS                           | OWNER/OPERATOR; THE<br>HARLEY PAUL CO. OWNS<br>THE PROPERTY OUTFRONT                                                                                                                                                                                                                                                                                                                                                                                              |                              |                                        |
| SITE<br>ACTIVITIES                               | ONE 500-gallon manhole tank<br>was last known to be<br>during the tank was<br>installed on 3/1/92. THE<br>TANK WAS SETTING UP IN<br>JUNE 1993. THE TANK WAS<br>CLOSED IN PLACE DURING THE<br>TANK THE DECID 8/1/93-42<br>11/1997 WHERE FLUID WAS<br>REMOVED FROM THE TANK<br>AND FILLED WITH SAND<br>THE 1/2 GRATE WAS<br>REMOVED IN 4/98 AND<br>COVERED WITH SAND AND<br>4 INCHES OF CONCRETE<br>PLUMBING OF THIS TANK<br>LEAKED AND WAS REPAIRED<br>IN 5/15/99. |                              |                                        |
| Is this page reproduced with additional history? |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |



**D. Describe the circumstances of the discovery of the release:**

THE MARLEY PUMP COMPANY PLANNED TO EXPAND THEIR PUMP TESTING FACILITIES. THE NEW FACILITY WOULD INCLUDE THREE UNDERGROUND STORAGE TANKS. PRIOR TO INSTALLING AND CONSTRUCTING THE TESTING FACILITY, AN ENVIRONMENTAL ASSESSMENT NEEDED TO BE CONDUCTED. THE MARLEY PUMP CO. CONTACTED SENERA ENVIRONMENTAL SERVICES, INC. TO CONDUCT A SUBSURFACE INVESTIGATION. SENERA DRILLED ONE BOREHOLE, EN-1, NEAR THE SOUTHWEST CORNER OF THE TESTING FACILITY. THE DATA FROM THE 3/10/82 INVESTIGATION INDICATED THE PRESENCE OF BTEX CONSTITUENTS IN WATER ONLY.

**E. Describe the initial actions taken to abate the petroleum release:**

THE MARLEY PUMP CO. CONTACTED METALS & EDDY, INC. TO CONDUCT A LIMITED SUBSURFACE INVESTIGATION TO INVESTIGATE THE LATERAL AND VERTICAL EXTENT OF CONTAMINATION, IF ANY.

**F. Current Site Conditions****(COMPLETE YOUR ANSWERS TO THE SPACE PROVIDED)****A. Provide a general description of the site geology:**

The subsurface soil is light brown to brown with grey mottling. The soil consists mainly of FSc - clayey silt to the terminus of each boring. The boring terminated into a hard, moderately clayey with some fine pebbles (glacial till).

**B. Description of the existing UST system:**

This page may be photocopied if more than 6 tanks exist at this site.

|                                                              |          |   |   |   |   |   |
|--------------------------------------------------------------|----------|---|---|---|---|---|
| Tank Number                                                  | 1        | 2 | 3 | 4 | 5 | 6 |
| Capacity (gallons)                                           | 5000     |   |   |   |   |   |
| Product Stored                                               | Gasoline |   |   |   |   |   |
| Construction Material                                        | Steel    |   |   |   |   |   |
| Operational Status                                           |          |   |   |   |   |   |
| Current product                                              | 1        | 1 | 1 | 1 | 1 | 1 |
| Contains NO product & is out-of-use                          | 1        | 1 | 1 | 1 | 1 | 1 |
| C. Tank & line tightness tests required by IDNR? (yes or no) | NO       |   |   |   |   |   |
| Tank Leak Rate (gph)                                         | NA       |   |   |   |   |   |
| Line Leak Rate (gph)                                         | NA       |   |   |   |   |   |

**>> Attach Appendix "II(C) - Tank & Line Tightness Testing Results"**

If tanks or lines were tightness tested, attach copies of all results, supporting field data and the third party evaluation of the leak detection system. Explain the cause of testing anomalies and discuss any corrective actions or repairs made to the system.

**>> D. Attach Appendix "II(D) - Topographical Site Map"**

Provide a topographical map of the site and surrounding area developed from work done at the site, city surveys where available or USGS maps. Legible contour elevation differentials no greater than 10 feet must be provided. Two foot contour intervals are preferred.

## &gt;&gt; E. Attach Appendix "EM" - Scaled Site Plan

Provide a scaled map (scale 1 inch = 70 to 50 feet) of the site and the immediate surrounding area. It must show the following, but is not limited to: 1) Location and extent of existing and removed USTs, product flows and displacements. 2) Portages and features (i.e. buildings, roads, walls, waterways, sidewalks, etc.)

## &gt;&gt; F. Attach Appendix "FM" - Scaled Site Vicinity Map

Provide a scaled (scale 1 inch = 200 to 500 feet) vicinity map showing the site in relation to surrounding general features. It must show the following, but is not limited to:

- 1) Portages general features (i.e. buildings, roads, waterways, sidewalks, etc.)
- 2) Location of properties adjacent to the site affected or potentially affected by the contamination

List below the names of owners of property affected or potentially affected by the contamination. Enter the names correspond to the data provided on appendix "FM" Scaled Site Vicinity Map.

| Property Owner Name                      | Property Address                       | Owner Mailing Address                                                                                     |
|------------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------------------------------|
| 1 HAMILTON TECHNICAL INSTITUTE           | 1011 E. 53RD STREET<br>DAVENPORT, IOWA | People involved at this facility did not provide this information after several attempts to contact them. |
| 2 OCEAN TEST CENTRAL                     | 501 W. 7TH STREET<br>DAVENPORT, IOWA   | People at OCEAN did not provide this information after several attempts to contact them.                  |
| 3 A-1 RENTAL                             | 54th & BRADY<br>DAVENPORT, IOWA        | The people involved at this facility did not know the other's mailing address.                            |
| 4 DELANY'S RESTAURANT -<br>CENTRAL GROVE | 1500 BRADY STREET<br>DAVENPORT, IOWA   | The general manager did not provide mailing address for property owner - General                          |
| 5                                        |                                        |                                                                                                           |
| 6                                        |                                        |                                                                                                           |
| 7                                        |                                        |                                                                                                           |
| 8                                        |                                        |                                                                                                           |
| 9                                        |                                        |                                                                                                           |
| 10                                       |                                        |                                                                                                           |
| 11                                       |                                        |                                                                                                           |

\* When filling in the property owners on whether they obtain their water from a private well or the City of Davenport, all property owners indicated that they obtain their water from the City of Davenport.

## VII. Soil Sampling Methods &amp; Findings

## CONFINE YOUR ANSWER TO THE SPACE PROVIDED

## A. Boring number and placement.

Explain and justify the rationale used to determine the number and placement of soil borings. Factors that should be taken into consideration when developing the rationale include site geography, media permeability, mobility of contaminants and duration of the release. The number and placement of borings must be sufficient to allow for:

- 1) determination of the lateral and vertical extent of soil contamination, 2) accurate description of the stratigraphy, and 3) identification of the transition area between those areas that do and do not exceed the soil contamination cleanup level. The identification of the transition area will require the construction of contours developed through the interpolation of data. Additional information will be required to substantiate the location of contour lines if it is determined that the data are not consistent with the rationale or data provided, or the interpolation techniques appear to be questionable.

METRAY & EGGY'S INVESTIGATION WAS BASED UPON SENECA ENVIRONMENTAL'S INITIAL INVESTIGATION AND IAL 135 RULES AND GUIDELINES. FURTHERMORE, OBSTRUCTIONS SUCH AS BUILDINGS, FENCES, ETC. ALSO PLAYED A ROLE IN DETERMINING MONITORING WELL LOCATION RATIONALE.

MW-1: MONITORING WELL MW-1 WAS PLACED UPGRADIENT AND WITHIN 20 FEET OF THE CLOUD-IN-PARK UST. SOIL AND GROUNDWATER DATA GATHERED FROM THIS WELL WILL HELP DETERMINE THE VERTICAL AND LATERAL EXTENT OF CONTAMINATION. FURTHERMORE, THE DATA ACCURATELY DESCRIBES THE SOIL STRATIGRAPHY NECESSARY FOR REMEDIATION.

MW-2: MONITORING WELL MW-2 WAS PLACED DOWNGRADIENT. THE MONITORING WELL WAS PLACED IN THIS LOCATION TO DETERMINE WHETHER SENECA ENVIRONMENTAL'S DATA WAS VALID. DATA, BOTH SOIL AND GROUNDWATER, GATHERED FROM THIS MONITORING WELL WILL HELP DETERMINE THE LATERAL AND VERTICAL EXTENT OF CONTAMINATION. FURTHERMORE, THE DATA ACCURATELY DESCRIBES THE SOIL STRATIGRAPHY NECESSARY FOR FUTURE REMEDIATION.

MW-3: MONITORING WELL MW-3 WAS PLACED UPGRADIENT OF THE UST ARE. THE DATA, BOTH SOIL AND GROUNDWATER, GATHERED FROM THIS MONITORING WELL, WILL HELP DETERMINE THE VERTICAL AND LATERAL EXTENT OF CONTAMINATION. FURTHERMORE, THE DATA ACCURATELY DESCRIBES THE SOIL STRATIGRAPHY NECESSARY FOR FUTURE REMEDIATION.

## &gt;&gt; B. Attach Appendix "E1(B) - Soil Boring Logs"

Complete and attach a [E1(B) Form 243-1992 for each soil boring or site.

C. Explain the actions taken to prevent cross-contamination between boreholes during installation and sampling. All down-hole equipment, augers, split spoons, were decontaminated prior to intensive investigation by steam cleaning. The steam cleaner utilized approximately 3,000 psi with water temperatures of 200°F.

D. List the vapor equipment used. Describe its use and evaluate conclusions drawn from vapor results and collection procedures. Equipment must be calibrated at the beginning and end of each day at the site, at a minimum.

A Micropac Phosphorimetric Detector (PID) was used to conduct a soil vapor headspace analysis to determine breathing zone health and safety during. A glass probe was inserted for each 0.5 foot depth was placed into a pre-charged Soil Gas Aluminum foil was placed to seal over the jar. The soil jar lid was placed on top. The soil sample was allowed to vaporize for at least 10 minutes prior to analyzing the headspace with the PID. The PID equipment was calibrated prior to, during, and after sampling procedures.

The soil vapor headspace results indicate that Open headspace was evident for all borings except HWS-3. The 15.0-17.5 ft interval indicated a H2 gas reading. The sample was collected for laboratory analysis. Furthermore, the PID was not working appropriately on HWS-1 for the interval 2.5-10 feet. The PID was recalibrated and began working appropriately thereafter.

**Tabulate Daily Consumption Data In The Chart Below**

[illegible]

8. Describe soil sample collection methods and explain why the methods provide a representative sample. Split spoon and ballston auger producing a continuous core are acceptable soil sampling devices. At a minimum, soil samples must be collected at 3-foot intervals and when changes in the formation occur for soil observations, vapor sampling and other indicated analysis.

Soil sampling was conducted by hand digging 10cm AUGERS. INSIDE THE AUGERED HOLE AUGERS, A FIVE FOOT LONG 3-inch outer diameter steel auger was pushed into the substrate. The needed allowed for a relatively non-disturbed sample and the relatively fine material for each five foot normal. The speed after recovery was measured. The ease of obtaining representative samples and the 5-foot depth was manually divided into two-1.5 foot sections. Each section was spiced in half and appropriate sample weights were collected - to appropriate soil sample jars for PID and laboratory analysis.

>> F. Anach Appendix "TILDE" - Soil Contamination Plume Map

Provide soil contamination plume maps depicting the full extent of release areas with exceeding the soil contamination corrective action level under 135.709 and the levels of contamination within the plume. The extent of off-site soil contamination must be investigated. Labeled bearing locations with the petroleum hydrocarbon concentrations used to determine the extent of the plume. The map must contain a sufficient number of data points to adequately justify the construction of plume anomaly lines. Identify barriers used to determine hydrologic connectivity.

## IV. Groundwater Sampling Methods &amp; Findings

CONFINE YOUR ANSWER TO SPACE PROVIDED

## A. Boring number and placement.

Explain and justify the estimate used to determine the number and placement of groundwater monitoring wells. Factors that should be taken into consideration when developing the network include site stratigraphy, media conductivity, mobility of contaminants and direction of the plume. The number and placement of wells must be sufficient to allow the 1) determination of the lateral and vertical extent of groundwater contamination, 2) accurate description of the stratigraphy, and 3) identification of the transition zone between clean areas that do not get crossed the contamination cleanup level. The identification of the transition zone will require the construction of contours developed through the interpolation of data. Additional information will be required to substantiate the location of cleanup lines if it is determined that the data are not consistent with the estimate or data provided, or the interpolation technique appear to be questionable.

Consideration of boring placement also given so that the most data can be obtained from one favorable well boring / monitoring well location. Furthermore, Rules and Regulations of the IAC PS were considered to soil bank / monitoring well placement. Three monitoring wells were chosen as the minimum necessary so that a groundwater flow contour map can be drawn by the triangulation method also; the monitoring wells were placed in such away so as to help determine the extent of contamination, provide background data, and verify other consultants data.

## &gt;&gt; B. Attach Appendix "IV(B) - Monitoring Well Construction Diagram"

Complete and attach a DMR from 542-1392 for each monitoring well constructed at the site.

## C. Explain permanent monitoring well construction. If the following well construction material or dimensions vary, indicate the variations on DMR Form 542-1392.

- 1) method of cleaning well components prior to installation. Steam cleaning: 3000 psi with water temperatures of 200°F
- 2) casing and screen material. 2-inch diameter, flush threaded PVC
- 3) screen slot size. DID MACHINE SLOTTED
- 4) how the sections of casing and screens are connected. flush threaded joints
- 5) method used to install filter pack and seal. The material was placed in the annular space of the following casing and screen PVC well. The depth of the material was measured in the annular space with a discontinuous weight tape measure.
- 6) actions taken to prevent cross-contamination of wells during construction and sampling. The monitoring wells were grouted with grout to their insertion in the bore hole (allow stem to dry). Clean PVC liners were used to handle all down hole materials.
- 7) monitoring well development procedure. Borehole a 6-in. diameter (casing and downhole screen) 5-foot long borehole. Borehole 3-5 small amounts of water, pH, TDS, specific conductivity are checked; or if dry. In this case, the wells were developed using air.

## D. For samples collected from boreholes:

(Temporary casing and screens are collapsed prior to sample collection.)

- 1) Describe the type and use of temporary casing and screens.
- 2) Explain and justify the adequacy of well development procedures to ensure a representative sample.

## E. Explain and justify the adequacy of groundwater sampling and well purging methods.

Well Purging: The monitoring wells were purged with a PV cleaned PVC bailer and no less than 10 well volumes (10 well volumes) were removed before the groundwater sample was representative of the aquifer. One well volume is calculated as:  $\text{Total Volume} = \text{Well Diameter} \times \text{Well Depth} \times \pi \times 0.785$ . In this case, the wells were purged dry. Groundwater Sampling: Groundwater samples were collected from the three on-site monitoring wells with a pre-cleaned Teflon bailer and core. The water from the monitoring well was placed immediately into HDPE vials, placed on ice (4°C), and shipped by express courier to the laboratory.

## F. Groundwater Data for Contour Map Development (SURVEY DATA FROM ADJACENT SITES MAY BE UTILIZED)

| Well<br>Boring<br>Number | Date<br>Measured | Static Water<br>Level (ASL)<br>(to 0.01 ft) | Water Level Corrected<br>due to Free Product<br>(Yes/No) | Product Depth | Ground Surface<br>Elevation (ASL)<br>(to 0.1 ft) |
|--------------------------|------------------|---------------------------------------------|----------------------------------------------------------|---------------|--------------------------------------------------|
| HW-1                     | 10/17/92         | 85.06                                       | No                                                       | 0             | 97.95                                            |
| HW-2                     | 10/17/92         | 82.72                                       | No                                                       | 0             | 97.79                                            |
| HW-3                     | 10/17/92         | 85.88                                       | No                                                       | 0             | 97.50                                            |
|                          |                  |                                             |                                                          |               |                                                  |
| HW-1                     | 11/01/92         | 86.92                                       | No                                                       | 0             | 97.95                                            |
| HW-2                     | 11/01/92         | 84.04                                       | No                                                       | 0             | 97.79                                            |
| HW-3                     | 11/01/92         | 87.80                                       | No                                                       | 0             | 97.50                                            |
|                          |                  |                                             |                                                          |               |                                                  |
|                          |                  |                                             |                                                          |               |                                                  |
|                          |                  |                                             |                                                          |               |                                                  |
|                          |                  |                                             |                                                          |               |                                                  |
|                          |                  |                                             |                                                          |               |                                                  |
|                          |                  |                                             |                                                          |               |                                                  |
|                          |                  |                                             |                                                          |               |                                                  |
|                          |                  |                                             |                                                          |               |                                                  |

\*Describe below the correction method used to determine the static water level. Because product was not in the water surface, correction methods to determine the static water level were not necessary.

Describe the benchmark used to survey for groundwater surface elevations. The benchmark was a power pole in the east parking lot. The benchmark was assigned an arbitrary DATUM of 100 ft ASL. The target was surveyed to ensure the top would close appropriately.

## &gt;&gt; G. Attach Appendix "IV(G)-Groundwater Contour Map"

Provide a groundwater contour map based on well data at the site and the adjacent area. All wells at the site must be shown on the map. Wells constructed in different aquifers must be identified. Indicate the groundwater flow direction with an arrow. Groundwater contours and elevations at each data point used for contouring must be labeled on the map. Contours must be consistent with observed water level elevations. Measurements of static water level and depth to the bottom of the wells must be taken. An adequate number of water levels must be measured at each well to determine the static water level. Static water levels must be measured to the nearest 0.01 foot. Identify wells used to determine hydraulic conductivity.

**H. Describe and explain the following:**

- 1) identify the methodology and device used to determine static groundwater levels. A interplan probe (IP) is a device used to measure both piezometric head and the water level. The water level measurement was taken on the north side of the top of the PVC casing. The water level was recorded when a keeping line was evident.
- 2) provide confirmation that the methodology used will provide the required levels of accuracy. The interplan probe uses diaphragm instructions to guide the user through each station procedures. The internal diaphragm allows the user to determine the origin of various faults and the required correction. The interplan probe the user through a 12-step process to ensure that the PID is calibrated.
- 3) groundwater flows and any anomalous water levels, appropriately.

Anomalous groundwater levels did not exist during this sampling round.

- 4) fluctuations in water levels with special emphasis on those which may alter general groundwater gradient or flow direction.

No change of groundwater flow direction occurred during this sampling round.

**>> I. Attach Appendix "VII - Groundwater Contamination Plume Maps"**

Provide groundwater contamination plume maps depicting the full extent of all phase product and dissolved phase contamination extending the groundwater investigative action levels under 135.7(f) and the lowest groundwater contamination within the plume. The extent of off-site groundwater contamination must be investigated. Label each data point with the contamination concentration used to determine the extent of the plume. The map must contain a sufficient number of data points to adequately justify the contamination of plume contours. Identify free product thickness.

**V. Sampling Quality Control**

*(Confine Your Answer to the Space Provided)*

Provide a statement that indicates the quality control/quality assurance (QC/QA) procedures used during the site investigation were at least as stringent as those contained in DOE's Leaking Underground Storage Tank Quality Assurance Plan.

The Marine Pump Co.'s consultant, Matney & Eddy, Inc., followed IANER's QA/QC plan and more stringent QA/QC procedures. Matney & Eddy, Inc. also followed a QA/QC to conduct this field work. It exceeded those requirements required by IDNR.

**VI. Hydrogeological Cross-Sections****>> Attach Appendix "VI - Hydrogeological Cross-Section Diagrams"**

Develop, from the borings that were required to identify the extent of contamination, stratigraphically correlated hydrogeological cross-sections or three-dimensional diagrams which adequately define the spatial relationships of subsurface materials at the site. The cross-sections should illustrate the materials in the contamination zone. The sections or diagrams must include the following information:

- 1) Identification of types and characteristics of the geological materials present.
- 2) Identification of contact zones between different geological units/strata, noting areas of high permeability or fracture.
- 3) Detailed lithologic information including location, depth of termination and type of sediment.

**VII. Hydraulic Conductivity**

*(CONFINE YOUR ANSWER TO THE SPACE PROVIDED)*

A. Determine and record here the hydraulic conductivity of subsurface materials at the site. Identify borings and wells used to determine hydraulic conductivity. Include calculations and data used to obtain the values. The Cooney-Elliott calculation for hydraulic conductivity was used. Balaban technique for gravel in alluvium wells.

$$K = \frac{rc}{2L(T_0 - T_1)} \ln \left( \frac{L}{r} \right) \ln \left( \frac{H(T_1)/H(T_0)}{H(T_2)/H(T_0)} \right)$$

$$K_{W-1} = 7.80 \times 10^{-4} \text{ cm/sec}$$

$$K_{W-2} = 9.3 \times 10^{-4} \text{ cm/sec}$$

$$K_{W-3} = 7.9 \times 10^{-4} \text{ cm/sec}$$

$$TRANSMISSIVITY, T(T_0) = K_m$$

$$K_{W-1} = 3.00 \times 10^{-4} \text{ cm/sec}$$

$$K_{W-2} = 2.94 \times 10^{-4} \text{ cm/sec}$$

$$K_{W-3} = 2.43 \times 10^{-4} \text{ cm/sec}$$

- B. Indicate the method used.

C. If an equivalent method was used to determine conductivity, evaluate its accuracy.

D. Explain why the location/number of data points where hydraulic conductivity was determined adequately provides a representative indication of conductivity at the site.

*Hydraulic conductivity tests were performed in such way to illustrate their uniform magnitude across the site (all within one order of magnitude).*

### VIII. Receptor Survey

#### >> Attach Appendix VIII - Receptor Survey Map

Provide a site area map that identifies the following:

A. Surface Water Body Survey. Location of surface water bodies (i.e. lakes, ponds, streams, streams, etc.) within 5000 feet of the petroleum contaminated area. Include an evaluation of the potential for hydrogeological connections between the contamination and surface water. Justify the decision to conduct or not to conduct monitoring to determine the impact of contamination on surface water quality. Such samples are typically collected to determine the impact of contamination on surface water quality. Sample when upstream of the release can help establish the background levels for the compounds of concern. Subsequent samples taken downstream will provide information regarding contamination concentrations versus travel time. If surface water sampling is conducted, provide a discussion of the sampling methodology and evaluate the adequacy of the sampling program. Tabulate the analytical results. Also record visual observations (i.e. sludge, foam, etc.). Label the narrative and analytical results in Appendix VIII pertaining to the above with the heading "Surface Body Receptor Survey".

B. Conduit Survey. Location of utility (i.e., power lines, storm and sanitary sewers, etc.), natural (i.e. ditches, creeks, etc.) conduits and confined spaces (i.e. basements, crawl spaces, etc.) within 250 feet of the area of petroleum contamination. Include a description of the investigation conducted to determine the potential for the conduits to act as pathways for vapors and products. The investigation must include soil sample collection for laboratory analysis and vapor monitoring. The focus of the investigation should be influenced by soil types, product type, phases and concentrations, location and depth of the utility and confined spaces and groundwater elevations. In tabular form, define the type of conduit or confined space, conduit backfill material, slope of conduit end trench, and relationship to groundwater levels. Tabulate the analytical results. Indicate if contamination has resulted in the presence of negative vapors or caused physical damage to conduits or confined spaces. Label the narrative and analytical results in Appendix VIII pertaining to the above with the heading "Conduit Survey".

The following are recommended when conducting a vapor survey in an accessible utility conduit:

The vapor survey is required if there are reports of vapors or if the conduit has been impacted by the contamination or if there is the potential for vapors based on the type of substance released.

- 1) Use an explosionmeter and photoionization detector (PID) to take vapor readings. Start at the manway closest to the site. Walk upstream and downstream to determine if and where the product or vapors are entering, and the extent of the impacted area. "Check" each manway cover and take readings of oxygen, explosionmeter and PID. Repeat measurements at mid-depth and water level or bottom of the conduit.
- 2) Check air flow directions from the manway to determine if direction of vapors is occurring.
- 3) Collect water or average samples. Observe for sludge and odors. If there is odor but no product, consider using the PID to obtain a head space analysis.
- 4) Check all incoming conduit branches. If odors are detected, continue the investigation upstream and downstream even if no product is present.
- 5) Check all manways near the site.



**The following are recommended when conducting a confined space survey:**

- 1) Check confined spaces using an explosives and PID. Record names and addresses of building residents/owners.
- 2) Check for vapors near basement, sewer drains and near any foundation cracks.

C. Groundwater Survey. Identifying active, inactive, abandoned and plugged groundwater wells within 1,000 feet of the petroleum contaminated area. Groundwater professionals only need to report well information readily available from public entities (i.e. county health or zoning departments, DNR, Water Supply Section (515243-6126), Geological Survey Bureau (515/355-1575) etc.) and water well owners. An onsite survey will be necessary to identify all the wells in a 300 foot radius of the petroleum contaminated area. Exclude in the appendix:

- 1) Copies of available well logs.
- 2) Name and address of each well owner. Correlate with well number.
- 3) Description of the plugging method for those wells not sealed according to chapter 567-30 IAC.

**4) Complete the following Table**

*"Plugging if additional space is needed"*

| Well # as identified on Emergency Survey Map                         | Is GCS Well? | Plugged Well? | Not Plugged Well? |    |    |    |    |    |    |    |    |
|----------------------------------------------------------------------|--------------|---------------|-------------------|----|----|----|----|----|----|----|----|
| Well Status                                                          |              |               |                   |    |    |    |    |    |    |    |    |
| Active                                                               | 11           | 0             | 11                | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| Inactive                                                             | 0            | 11            | 0                 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| Abandoned                                                            | 11           | 11            | 11                | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| Plugged (see Appendix)                                               |              |               |                   |    |    |    |    |    |    |    |    |
| According to Chapter 567-30 IAC                                      | 11           | 11            | 11                | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| Describe in the appendix the plugging process used for each well and | 11           | 11            | 11                | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| Well Use                                                             |              |               |                   |    |    |    |    |    |    |    |    |
| Public Well -                                                        | 11           | 11            | 11                | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| Private Drinking Well                                                | 11           | 11            | 11                | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| Industrial Supply                                                    | 11           | 11            | 11                | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| Other                                                                | 11           | 11            | 11                | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| Basic Water Level Elevations                                         | NA           | NA            | NA                |    |    |    |    |    |    |    |    |
| Well Depth Elevations                                                | NA           | NA            | NA                |    |    |    |    |    |    |    |    |
| Well Diameter                                                        | NA           | NA            | 6"                |    |    |    |    |    |    |    |    |
| Casing Material                                                      | Steel        | Steel         | Steel             |    |    |    |    |    |    |    |    |
| Well Log Provided                                                    |              |               |                   |    |    |    |    |    |    |    |    |
| NO                                                                   | 11           | 11            | 11                | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| YES                                                                  | 11           | 11            | 11                | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |

Label the narrative and elevations in Appendix VIII pertaining to the above with the heading "Groundwater Well Survey."

B. Groundwater Barrier Survey. Identify the location of barriers, (i.e. foundations, structures, ponds, levees, seals, natural, etc.) that would have an impact on the movement of the contamination. Explain the significance of the barriers by relating their proximity to the hydrogeological conditions at the site. Label the narrative in Appendix VIII pertaining to the above information with the heading "Groundwater Barrier Survey."

**IX. Certification of Site Health & Safety**

**REQUIRED**

**Statement of Verification of On-Site Health & Safety Procedures**

The On-Site Health & Safety Procedures and Conditions conform with applicable OSHA requirements.

Yes ☒ No ☐

## X. Tabulation of Analytical Data

Photocopy this form if additional space is needed.

## Soil Analytical Data Information

Provide a tabulation of analytical data for each soil boring or monitoring well. List each sampling event chronologically with the oldest data first. If borings were sampled on a particular day at different elevations, list the results for the samples closest to the ground surface first. Record all elevations as feet Above Sea Level (ASL).

|                                    |                                                 |  |  |  |  |  |
|------------------------------------|-------------------------------------------------|--|--|--|--|--|
| Boring/Well Number                 | HW-1 HW-2 HW-3 HW-3P                            |  |  |  |  |  |
| Date Sampled                       | 11/1/92 11/1/92 11/1/92 11/1/92 11/1/92 11/1/92 |  |  |  |  |  |
| Elevation (ft ASL)                 | 27.95 27.95 27.99 27.50 27.50 27.50             |  |  |  |  |  |
| Ground Surface                     | 28.00 28.00 28.00 28.00 28.00 28.00             |  |  |  |  |  |
| Soil Sample                        | 77.5 77.5 77.5 77.5 77.5 77.5                   |  |  |  |  |  |
| Static Concentration               | 25.00 25.00 25.00 25.00 25.00 25.00             |  |  |  |  |  |
| Total Petroleum Hydrocarbons (ppm) | 1200 1200 1200 1200 1200 1200                   |  |  |  |  |  |
| Extractable Hydrocarbons (ppm)     | ND ND ND ND ND ND                               |  |  |  |  |  |

## Groundwater Analytical Data Information

Provide a tabulation of groundwater sampling analytical data. List the sampling events starting with the first well in the well identification scheme. If the well was sampled more than once, list each result chronologically. Record all elevations as feet Above Sea Level (ASL).

|                                                                                               |                         |  |  |       |       |       |  |  |  |
|-----------------------------------------------------------------------------------------------|-------------------------|--|--|-------|-------|-------|--|--|--|
| Boring/Well Number                                                                            | HW-1 HW-2 HW-2P         |  |  |       |       |       |  |  |  |
| Date                                                                                          | 11/1/92 11/1/92 11/1/92 |  |  |       |       |       |  |  |  |
| Elevation (ft ASL)                                                                            | # (See note)            |  |  | 27.95 | 27.99 | 27.50 |  |  |  |
| Ground Elevation                                                                              |                         |  |  | 62.5  | 64.25 | 66.5  |  |  |  |
| Top of Screen                                                                                 |                         |  |  | 66.5  | 68.04 | 67.82 |  |  |  |
| Static Water Level                                                                            |                         |  |  |       |       |       |  |  |  |
| Benzene (ppb)                                                                                 |                         |  |  |       |       |       |  |  |  |
| Methylbenzene (ppb)                                                                           |                         |  |  |       |       |       |  |  |  |
| Toluene (ppb)                                                                                 |                         |  |  |       |       |       |  |  |  |
| Xylene (ppb)                                                                                  |                         |  |  |       |       |       |  |  |  |
| >>> Attach Appendix X Laboratory Data Sheets<br>Provide copies of all laboratory data sheets. |                         |  |  |       |       |       |  |  |  |

## XI. Free Product

CONFINE YOUR ANSWER TO THE SPACE PROVIDED

- A. Is free product present at the site? YES ☐ NO ☒
- B. If yes, indicate the date the "Free Product Removal Report" was submitted.
- C. Discuss the design and evaluate the effectiveness of the free product removal system in relation to the hydrogeological conditions at the site.
- D. Provide monthly reports to DNR on the attached DNR forms 542-1424 and 542-1425.

**XII. Contamination Source****A. Identify the source of contamination at the site.**

The potential source of contamination is a 500 gallon manufactured steel underground storage tank.

**>>> E. Attach Appendix "XIII" - Off-Site Contamination Source Support Data**

If the contamination source identified in XII(A) is an off-site source, justify your conclusion with analytical data and maps showing the site under investigation and potential off-site sources and groundwater flow direction.

### XIII. Site Risk Classification

#### A. HIGH RISK SITE CONDITIONS

The following describe high risk site conditions. Conditions numbered 7, 9, 13, and 14 include a caveat, based on specific site factors, for proposing a low risk classification. Check the appropriate box if documentation has been provided to substantiate the existence of specific site conditions that will result in a low risk classification. A site is classified as high risk if any of the following conditions exist and documentation is not provided to confirm a low risk classification. All responses must be justified with technical and hydrogeological data obtained during the site assessment and the application of recognized engineering, geological and hydrogeological principles. Give your justification for each answer in separate "XIII - Site Risk Classification Justification." Summarize the responses to correspond with the condition description (e.g., A1, A2, etc.).

#### CONDITION DESCRIPTION

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 1) The Threshold Limit Value-Time Weighted Average (TLV-TWA) for benzene in sampled groundwater exceeds or is likely to exceed 10 parts per million for more than 8 hours per day.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <input type="checkbox"/> YES, HIGH RISK<br><input type="checkbox"/> NO                                                                      |
| 2) The concentration of combustible gases in apartments, basements, crawl spaces, utility closets, attics or ordinary closets, vaults or any other confined space exceeds or is likely to exceed 10% of the Lower Explosive Limit (LEL).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <input type="checkbox"/> YES, HIGH RISK<br><input type="checkbox"/> NO                                                                      |
| 3) Surface water quality criteria standards contained in Article 567-61.3(4)(5)(b) of the Iowa Administrative Code are exceeded or are likely to be exceeded due to a hydrogeologic connection between the surface water and the contamination area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <input type="checkbox"/> YES, HIGH RISK<br><input type="checkbox"/> NO                                                                      |
| 4) Petroleum contaminated soil exceeding 100 mg/kg total organic hydrocarbon is in contact with a utility trench containing a PVC drinking water transmission line.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/> YES, HIGH RISK<br><input type="checkbox"/> NO                                                                      |
| 5) The petroleum contamination in utility trenches exceeds the corrective action levels in 123.2(8) of the Iowa Administrative Code.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <input type="checkbox"/> YES, HIGH RISK<br><input type="checkbox"/> NO                                                                      |
| 6) Petroleum contamination is present at concentrations or concentrations are likely to occur, to cause physical damage to a utility vault or a structure.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <input type="checkbox"/> YES, HIGH RISK<br><input type="checkbox"/> NO                                                                      |
| 7) Soil with a total organic hydrocarbon level greater than 100 mg/kg is located within 1,000 feet of an active well used as a public or private water source.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <input type="checkbox"/> YES, HIGH RISK<br><input type="checkbox"/> NO                                                                      |
| A site may be classified as low risk if a groundwater professional can demonstrate the water source will not be impaired by the soil contamination to the extent that an MCL is exceeded or in the absence of an MCL, an Action Level is exceeded. Factors that must be considered in evaluating the impact of the remaining soil contamination include well depth, composition, volume of influence and use; soil hydrogeological characteristics; soil permeability; transmissivity; and contamination concentrations and persistence; chemical characteristics; and migration potential of the released substance.                                                                                                        | Documentation is provided to support a LOW RISK CLASSIFICATION<br><br><input type="checkbox"/> YES, LOW RISK<br><input type="checkbox"/> NO |
| 8) Soil with a total organic hydrocarbon level greater than 100 mg/kg is located within the maximum high groundwater level of a protected groundwater source or groundwater serving a public or private water source.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/> YES, HIGH RISK<br><input type="checkbox"/> NO                                                                      |
| 9) The petroleum release occurred in an area of fractured limestone or karst topography (e.g., topography formed on limestone, gypsum, and other rocks by dissolution, characterized by sinkholes, caves and underground drainage).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/> YES, HIGH RISK<br><input type="checkbox"/> NO                                                                      |
| A site may be classified low risk if a groundwater professional can demonstrate that the protected groundwater source in the area of the petroleum release will not be impaired by the contamination to the extent that an MCL is exceeded or in the absence of an MCL, an Action Level is exceeded. Factors that must be considered in evaluating the impact of the petroleum contamination include soil hydrogeological characteristics; separation distance between the contaminated zone and protected groundwater source; soil permeability and transmissivity; overburden thickness; and contamination concentrations; and the petroleum's chemical characteristics and migration potential of the released substance. | Documentation is provided to support a LOW RISK CLASSIFICATION<br><br><input type="checkbox"/> YES, LOW RISK<br><input type="checkbox"/> NO |
| 10) A public or private water supply is or is likely to be contaminated to the extent that an MCL is exceeded, or in the absence of an MCL, an Action Level is exceeded.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <input type="checkbox"/> YES, HIGH RISK<br><input type="checkbox"/> NO                                                                      |
| 11) A protected groundwater source is contaminated to the extent that an MCL is exceeded, or in the absence of an MCL, an Action Level is exceeded.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/> YES, HIGH RISK<br><input type="checkbox"/> NO                                                                      |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>12) The contaminated groundwater plume is within 100 feet of natural or man-made structure or structure that could allow the vertical or horizontal migration of contaminants to a protected groundwater source that is used as a public or private water source.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p><input checked="" type="checkbox"/> YES, HIGH RISK<br/><input type="checkbox"/> NO</p>                                                                                                                                                                 |
| <p>13) The contaminated groundwater plume is within 1,000 feet of an active public or private water source.</p> <p>A site may be classified low risk if a groundwater professional can demonstrate that the protected groundwater source will not be impacted by the groundwater contamination to the extent that an MCL is exceeded or in the absence of an MCL, an Action Level is exceeded. Factors that must be considered in evaluating the impact of the remaining groundwater contamination include well depth, construction, volume of influent and effluent, new hydrogeological characteristics, and permeability and transmissivity; contamination concentrations and persistence, chemical characteristics and migration potential of the released substances.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p><input checked="" type="checkbox"/> YES, HIGH RISK<br/><input type="checkbox"/> NO</p> <p>Documentation is provided to support a LOW RISK CLASSIFICATION.</p> <p><input checked="" type="checkbox"/> YES, LOW RISK<br/><input type="checkbox"/> NO</p> |
| <p>14) The material sequestering groundwater moving as a public or private water source, or which is a protected groundwater source, from soil with a total organic hydrocarbon level greater than 100 mg/kg which has a hydraulic conductivity greater than <math>10^{-4}</math> meters per day.</p> <p>The sequestering material must have a hydraulic conductivity less than or equal to <math>10^{-4}</math> meters per day, a minimum thickness of three meters and be free of subsurface discontinuities between the contamination zone and the groundwater for the site to be classified low risk. A site may be classified low risk if a groundwater professional can demonstrate with hydrogeological and risk assessment data that the sequestering material will prevent or inhibit the migration of contaminants to the groundwater to the extent that an MCL or in the absence of an MCL, an Action Level will not be exceeded. A sufficient number of measurements of the hydraulic conductivity shall be made to accurately identify the hydrogeologic conditions of the sequestering material under the full area extent of the contamination zone. Measurements shall be made at a minimum of two locations. The distance between adjacent measurement locations shall not exceed 100 feet. The department may require additional measurements based on the hydrogeological complexity of the site.</p> | <p><input checked="" type="checkbox"/> YES, HIGH RISK<br/><input type="checkbox"/> NO</p> <p>Documentation is provided to support a LOW RISK CLASSIFICATION.</p> <p><input checked="" type="checkbox"/> YES, LOW RISK<br/><input type="checkbox"/> NO</p> |

## B. LOW RISK SITE CONDITIONS

The following describe low risk site conditions. Check the boxes that describe the site conditions.

### Condition Description

|                                                                                                                                                                                                                                                           |                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| <p>1) The soil total organic hydrocarbon concentration exceeds 100 mg/kg or the groundwater concentration exceeds an MCL or in the absence of an MCL, an Action Level is exceeded, but high risk conditions do not exist and are not likely to occur.</p> | <p><input checked="" type="checkbox"/> YES, LOW RISK<br/><input type="checkbox"/> NO</p> |
| <p>2) High risk conditions numbered 7, 9, 13 and 14 exist, but documentation is provided to substantiate the claim that specific site conditions are present that will result in a low risk classification.</p>                                           | <p><input checked="" type="checkbox"/> YES, LOW RISK<br/><input type="checkbox"/> NO</p> |

## C. NO ACTION REQUIRED SITE CONDITIONS

The following describe no action required site conditions. Check the boxes that describe the site conditions.

### Condition Description

|                                                                                                                                                                                                                                                                                                                      |                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <p>1) The soil total organic hydrocarbon concentration is equal to or less than 100 mg/kg and the groundwater concentration is equal to or less than an MCL or in the absence of an MCL, is equal to or less than an Action Level and high risk or low risk conditions do not exist and are not likely to occur.</p> | <p><input checked="" type="checkbox"/> YES, NO ACTION<br/><input type="checkbox"/> NO</p> |
| <p>&gt;&gt; Attach Appendix "XIII - Site Risk Classification Justification"</p>                                                                                                                                                                                                                                      |                                                                                           |

# **XIV. Corrective Action Response**

The corrective action response involves the identification of the best available treatment technology or best available management practices to address the contamination at the site. The corrective action response must be consistent with the site risk classification.

Contaminated sites classified as high risk can be reclassified to low risk if the condition causing the classification is closed. For example, if the only reason a site was classified high risk is because the soil around a PVC water line is contaminated, the site could be reclassified to low risk if the water line was replaced. For each site identified as high risk, prepare a corrective action response that will result in the reclassification of the site to low risk.

Please proceed to part "A" if the site has been classified as high risk. Sites classified as low risk are subject to least management practices which will include observation monitoring. Please proceed to part "B" if the site has been classified as low risk. Sites classified as no risk are not required to monitor or investigate.

## **A. High Risk Site Corrective Action Recommendations**

### **1. Identify below the contamination phases and estimated phase volumes at the site:**

|                                                                |         |             |
|----------------------------------------------------------------|---------|-------------|
| Vadose zone soil contamination present?                        | YES [ ] | NO [ ]      |
| If yes, approximate volume of contaminated soil present        | _____   | Cubic Yards |
| Dissolved phase petroleum product present in the groundwater?  | YES [ ] | NO [ ]      |
| If yes, approximate volume of contaminated groundwater present | _____   | Gallons     |
| Free phase petroleum product present?                          | YES [ ] | NO [ ]      |
| If yes, approximate volume of free phase product present       | _____   | Gallons     |

### **2. List at least two treatment technologies available to address the contamination at the site.**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

### **> > 3. Attach Appendix "XIV(A3) - Treatment Technology Evaluation"**

Provide an evaluation of each treatment technology listed in XIV(A3) organized as follows:

#### **1) TREATMENT TECHNOLOGY.** Identify the treatment technology.

**2) TREATMENT METHOD EFFECTIVENESS.** Evaluate the treatment method's capability to reduce the components of concern to acceptable levels and estimate the length of time it will take to reduce the components to these levels.

**3) RELIABILITY.** Evaluate factors that may have an impact on the reliability of the treatment system. Consider such factors as groundwater quality, biological growth, design complexity, weather, operational maintenance and monitoring requirements, etc.

**4) SITE CHARACTERISTICS.** Evaluate the factors that may have an impact on the practicality of using the treatment method. Consider such factors as site geology, hydraulic conductivity, groundwater quality, site location and ability to install and monitor hydraulic control of the groundwater plume.

**5) COST ESTIMATES.** Evaluate start-up, operational and maintenance costs.

**6) ENVIRONMENTAL, PUBLIC HEALTH AND SAFETY BENEFITS AND DISADVANTAGES.** Evaluate the environmental and public health and safety benefits and disadvantages of the treatment system. Consider such factors as air emissions, wastewater discharges, groundwater injection systems, permits required, vandalism, access, etc.

### **> > 4. Attach Appendix "XIV(A4) - Best Available Technology"**

List your selection of the best available treatment technology to address the contamination phase at this site. Provide a detailed justification and explanation for selection of this technology. Base the justification narrative on professional judgment considering actual cost, actual equipment or techniques currently in use, published technical articles, site hydrogeology and research results, engineering and groundwater professional reference materials, consultation with experts in the field, capital and operating costs, and guidelines or rules of other regulatory agencies. Innovative treatment technology design selections are encouraged but must be substantiated by system operational and technical data that will support the best available treatment technology selection. Do not initiate treatment system design work until the proposed best available treatment technology concept has been accepted by RCDE.

**3. Report Submittal**

Please send one copy of the completed SCR and appendices to the Iowa Department of Natural Resources, Lead Coordinator, Wallace Building, Des Moines, IA 50319 and one copy of the completed SCR and appendices to GAB Business Services, Inc. P.O. Box 3837, Des Moines, IA 50322. Additional information or clarification may be requested.

Following approval of the SCR, IDNR will require the submission of a Corrective Action Design Paper (CADD). The CADD will contain technical information specific to the treatment system chosen to remediate the site and a monitoring proposal designed to determine the effectiveness of the system.

**4. Low Risk Site Corrective Action Recommendations****1. Identify below the contamination phases and estimated phase volumes at the site:**

Volcanic cone soil contamination present? YES ☐ NO ☒

If yes, approximate volume of contaminated soil present \_\_\_\_\_

YES ☐NO ☒

Cubic Yards

Dissolved phase petroleum product present in the groundwater? YES ☒ NO ☐

If yes, approximate volume of contaminated groundwater present \_\_\_\_\_

YES ☒NO ☐

Gallons

Free phase petroleum product present? YES ☐ NO ☒

If yes, approximate volume of free phase product present \_\_\_\_\_

YES ☐NO ☒

Gallons

**>>> 2. AHAES Appendix "XIV(K)" - Best Management Practices**

Provide a detailed best management practices plan. At a minimum, the plan must contain:

- 1) Description of leak detection activities that will be implemented at the site.
- 2) Schedule of activities and frequency of any prohibited practices, and other management practices, or a combination thereof, which will be implemented to prevent additional contamination.
- 3) Assurances the analytical and investigatory technical requirements discussed and referenced in this SCR will be followed. Vapor analysis results will be accepted provided that:

a) it can be demonstrated that the media being sampled and sampling points are conducive to the detection of contamination movement and increases in concentration (i.e., the sampling media must be demonstrable).

b) Gas chromatography or similar method of analysis is used for analysis of samples.

c) Samples for laboratory analysis must be obtained if the following screening levels are exceeded.

- 0.1 mg/l TPBC (near direct facilities) for soil gas (in situ, partial vacuum extraction)
- 1.0 mg/l TPBC (near gasoline facilities) for soil gas (in situ, partial vacuum extraction)
- 0.5 mg/l TPBC for groundwater (head space analysis)
- 1.0 mg/l TPBC (near direct facilities) for soil (head space analysis)
- 10.0 mg/kg TPBC (near gasoline facilities) for soil (head space analysis)

**>>> 3. AHAES Appendix "XIV(K)" - Monitoring Plan**

Provide a monitoring plan that will ensure any significant increase in contamination concentration or movement is detected. The number and location of monitoring lines must be consistent with contamination phase definition, soil permeability, hydraulic conductivity and groundwater flow direction. Include site maps to show monitoring locations. The following frequency is recommended. Any proposed reduction in the recommended sampling must be justified. Factors that must be considered in the justification include the relative potential of the released substance, potential impact on the environment and public health, if migration of the soil or groundwater contamination occurs, site hydrogeologic characteristics, soil permeability, transmissivity, and contamination concentrations and persistence.

**YEARS AFTER APPROVAL OF THE MONITORING PLAN****SAMPLE IN**

- 1) one through site
- 2) four through site
- 3) seven through site
- 4) twelve

monitor quarters 1, 3 and 4.  
monitor quarters 2 and 4  
monitor quarter 1  
monitor quarter 2

**4. Report Submittal**

Please send one copy of the completed SCR and appendices to the Iowa Department of Natural Resources, Lead Coordinator, Wallace Building, Des Moines, IA 50319 and one copy of the completed SCR and appendices to GAB Business Services, Inc. P.O. Box 3837, Des Moines, IA 50322. Additional information or clarification may be requested.

Monitoring results must be submitted to the extent required by IDNR's Site Monitoring Report (SMR). A copy of the Site Monitoring Report will be provided after the SCR is approved.

**APPENDIX 1**

**II(C) - TANK AND LINE TIGHTNESS TESTING RESULTS**

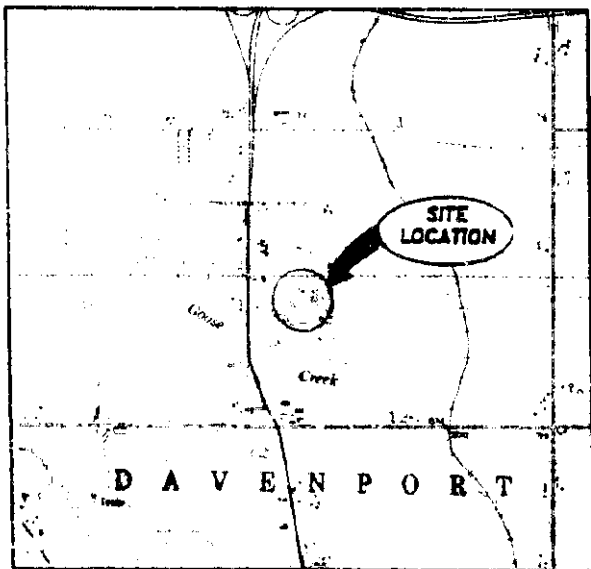
Tank and line tightness testing was not completed on this tank. The tank was closed-in-place prior to any effective IDNR regulations.





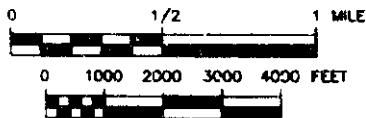
SITE LOCATION

COOK COUNTY  
T 78 N. R2W SEC. 12



SOURCE: U.S.G.S. DAVENPORT EAST, IOWA - ILL. (1975)

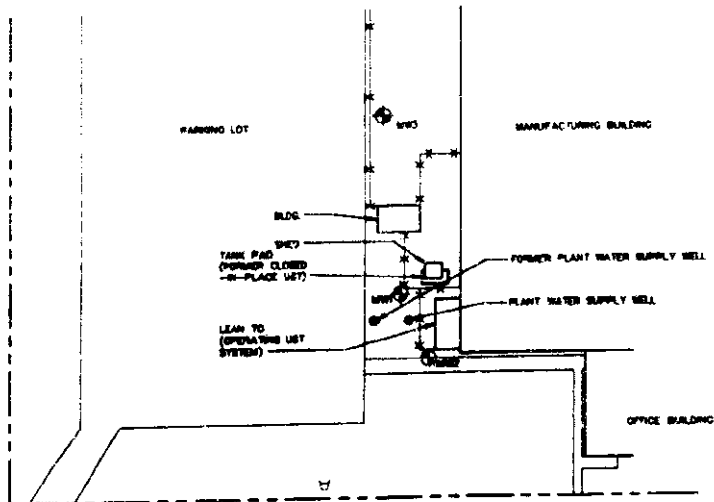
SCALE: 1:24000



### TOPOGRAPHICAL SITE MAP

The Marley Pump Company  
500 E. 59th Street  
Davenport, Iowa

METCALF & EDDY



0 75 90 100  
SCALE IN FEET

# LEGEND

- - - - - PROPERTY LINE
- FENCE
- WHD FIRE HYDRANT
- WHD WATER WORKING WELL
- WELL

NO PRODUCT LINES OR DISPENSERS WERE  
USED FOR THIS LIST THIS WAS A TEST TANK  
ONLY

## SCALED SITE PLAN

The Marley Pump Company  
500 E. 58th Street  
Des Moines, Iowa

METCALF & BERRY

0-000-00-000

BRADY STREET

DENNY'S  
RESTAURANT

AUTO  
REPAIR  
SHOP

ORION  
PEST  
CONTROL

THE MARLEY  
PUMP COMPANY

59<sup>th</sup> STREET

A - 1  
RENTAL

HAMILTON  
TECHNICAL  
INSTITUTE



NOT TO SCALE

### SCALED SITE VICINITY MAP

The Marley Pump Company  
500 E. 59th Street  
Davenport, Iowa

METCALF & EDDY

# IOWA DEPARTMENT OF NATURAL RESOURCES

## Soil Boring Log - Part I

READ PART II BEFORE COMPLETING

Submit to:

IOWA DEPT OF NATURAL RESOURCES

ATTN: UST

900 EAST GRAND AVENUE

DES MOINES, IA 50319-0034

For questions or assistance call:

(515) 281-8693

Sheet 1 of 2

|                                                |                                   |
|------------------------------------------------|-----------------------------------|
| FACILITY NAME                                  | 1) TRE HALEY PUMP COMPANY         |
| FACILITY ADDRESS                               | 2) 500 E. 5TH ST. DAVENPORT, IOWA |
| WELL CONTRACTOR REGISTRATION                   | 3) ID 00072 01                    |
| DRILLING METHOD                                | 4) Hollow Stem Auger (PA)         |
| BORING DEPTH (FEET) X BORING DIAMETER (INCHES) | 5) 25 ft x 6 1/4 inches           |

| BORING # | START DATE | END DATE   | REFERENCE ELEVATION | UST NUMBER  | LUST NUMBER |
|----------|------------|------------|---------------------|-------------|-------------|
| 9) MN-1  | 7) 9/16/92 | 8) 9/16/92 | 9) 99.61'           | 10) 7910556 | 11) BLTS 84 |

| DEPTH<br>(12) | COLOR<br>(13)            | MOISTURE<br>(14) | SAMPLE<br>(15) No. type                                   | PID READING<br>(16)                       | GEOLOGICAL DESCRIPTION<br>(17) (See Instructions on Reverse Side) |
|---------------|--------------------------|------------------|-----------------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------|
| 0-2.5'        | Brown                    | Moist            | MW-1<br>0-2.5'<br>3" od<br>15' long<br>split<br>spoon     | 0 ppm                                     | Fgc - Silty fine sand, trace organics                             |
| 2.5-5.0'      | Brown with Grey Mottling | Moist            | MW-1<br>2.5-5.0'<br>3" od<br>15' long<br>split<br>spoon   | 178 ppm*<br>Questionable<br>PID Reading   | Fgc - silt with trace organics                                    |
| 5.0-7.5'      | Brown with Grey Mottling | Moist            | MW-1<br>5.0-7.5'<br>3" od<br>15' long<br>split<br>spoon   | PID Not Working<br>Properly No<br>Reading | Fgc - silt with trace clay                                        |
| 7.5-10'       | Brown with Grey Mottling | Moist            | MW-1<br>7.5-10.0'<br>3" od<br>15' long<br>split<br>spoon  | PID Not Working<br>Properly No<br>Reading | Fgc - silt with trace clay                                        |
| 10'-12.5'     | Brown with Grey Mottling | Moist            | MW-1<br>10-12.5'<br>3" od<br>15' long<br>split<br>spoon   | 0 ppm                                     | Fgc - soft, silt with some clay                                   |
| 12.5-15.0'    | Brown and Grey           | Moist            | MW-1<br>12.5-15.0'<br>3" od<br>15' long<br>split<br>spoon | 0 ppm                                     | Fgc - soft, clayey silt                                           |

\*Continue to Appendix D: DATA ASL

|                                    |                            |  |  |  |
|------------------------------------|----------------------------|--|--|--|
| 18) OBSERVATIONS<br>(WATER LEVELS) | Elevation Measuring Point: |  |  |  |
|                                    | Date:                      |  |  |  |
|                                    | Level:                     |  |  |  |
|                                    | Time:                      |  |  |  |

DNR FORM (10/90)

Continued on the Back

542-1392

# IOWA DEPARTMENT OF NATURAL RESOURCES

## Soil Boring Log - Part I

### Return to:

IOWA DEPT OF NATURAL RESOURCES

ATTN: UST

900 EAST GRAND AVENUE

DES MOINES, IA 50319-0034

For questions or assistance call:

(515) 281-8693

Sheet 2 of 2

### READ PART II BEFORE COMPLETING

|                                                |                                      |
|------------------------------------------------|--------------------------------------|
| FACILITY NAME                                  | 1) The Harley Pump Company           |
| FACILITY ADDRESS                               | 2) 500 E. 9th Street, Des Moines, IA |
| WELL CONTRACTOR REGISTRATION                   | 3) ID 00072 01                       |
| DILLING METHOD                                 | 4) PA (Hollow Stem Auger)            |
| BORING DEPTH (FEET) X BORING DIAMETER (INCHES) | 5) 25 ft x 6 1/4 inches              |

| BORING # | START DATE | END DATE   | REFERENCE ELEVATION | UFT NUMBER | LIST NUMBER |
|----------|------------|------------|---------------------|------------|-------------|
| 9) MW-1  | 7) 9/14/92 | 8) 9/14/92 | 9) 49.81'           | 10) 710056 | 11) BLS-01  |

| DEPTH<br>(12)    | COLOR<br>(13)     | MOISTURE<br>(14)               | SAMPLE<br>No.   type<br>(15)                                       | PID READING<br>(16) | GEOLOGICAL DESCRIPTION<br>(17)<br>(See Instructions on Reverse Side)     |
|------------------|-------------------|--------------------------------|--------------------------------------------------------------------|---------------------|--------------------------------------------------------------------------|
| 15.0' -<br>17.5' | Brown and<br>Grey | Moist                          | 14-1 15' od<br>15-1 15' long<br>17-5 15' split<br>17-5 15' split   | 0 ppm               | Fgc - very soft clayey-silt                                              |
| 17.5' -<br>20.0' | Grey              | Moist                          | 14-1 13' o.d.<br>17-5 15' long<br>20-0 15' split<br>20-0 15' split | 0 ppm               | Fgc - very soft clayey-silt                                              |
| 20.0' -<br>22.5' | Grey              | Moist                          | 14-1 13' o.d.<br>15' long<br>15' split<br>15' split                | 0 ppm               | Fgc - soft, clayey-silt                                                  |
| 22.5' -<br>25.0' | Grey              | Moist<br>Dry (24.5 -<br>25.0') | 14-1 15' o.d.<br>15' long<br>15' split<br>15' split                | 0 ppm               | Fgc - very clay<br>Fgclp - hard, dry, glacial<br>fill, many fine pebbles |
|                  |                   |                                |                                                                    |                     | End of Boring                                                            |
|                  |                   |                                |                                                                    |                     |                                                                          |
|                  |                   |                                |                                                                    |                     |                                                                          |

\* CONTINUE TO ARBITRARY 100' DATUM FOR

|                                    |                            |  |  |  |
|------------------------------------|----------------------------|--|--|--|
| 18) OBSERVATIONS<br>(WATER LEVELS) | Elevation Measuring Point: |  |  |  |
|                                    | Date:                      |  |  |  |
|                                    | Level:                     |  |  |  |
|                                    | Time:                      |  |  |  |

# IOWA DEPARTMENT OF NATURAL RESOURCES

## Soil Boring Log - Part I

### Submit to:

IOWA DEPT OF NATURAL RESOURCES  
ATTN: UST  
900 EAST GRAND AVENUE  
DES MOINES, IA 50319-0084

For questions or assistance call:  
(515) 281-8693

Sheet 1 of 2

### READ PART II BEFORE COMPLETING

|                                                |                                              |
|------------------------------------------------|----------------------------------------------|
| FACILITY NAME                                  | 1) <u>The Marlin Pump Company</u>            |
| FACILITY ADDRESS                               | 2) <u>2000 E 54th Street, Des Moines, IA</u> |
| WELL CONTRACTOR REGISTRATION                   | 3) <u>LD 00072 01</u>                        |
| DRIILLING METHOD                               | 4) <u>PA</u> ( <u>Hollow Stem Auger</u> )    |
| BORING DEPTH (FEET) X BORING DIAMETER (INCHES) | 5) <u>25 ft x 6 1/4 inches</u>               |

| BORING #       | START DATE        | END DATE          | REFERENCE ELEVATION | UST NUMBER         | LUST NUMBER       |
|----------------|-------------------|-------------------|---------------------|--------------------|-------------------|
| 6) <u>MW-2</u> | 7) <u>9/14/92</u> | 8) <u>9/14/92</u> | 9) <u>99.71 #</u>   | 10) <u>PA00072</u> | 11) <u>DLTS02</u> |

| DEPTH<br>(12)   | COLOR<br>(13)                 | MOISTURE<br>(14) | SAMPLE<br>(15) No. type                           | PID READINGS<br>(16) | GEOLOGICAL DESCRIPTION<br>(17) (See Instructions on Reverse Side)                                      |
|-----------------|-------------------------------|------------------|---------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------|
| 0-2.5           | Black Brown<br><br>Brown      | Damp<br><br>Damp | MW-1 13" ad<br>0-25' 5' long<br>spiral<br>spiral  | 0 ppm                | Fgc - Silt, fine sand, with trace<br>organics<br><br>Cbc - Fine sand with medium<br>sand, little silt. |
| 2.5'-<br>5.0'   | Brown                         | Damp             | MW-2 13" ad<br>2.5'-15' long<br>spiral<br>spiral  | 0 ppm                | Fbc - hard, clayey-silt                                                                                |
| 5.0'-<br>7.5'   | Brown -<br>Black              | Damp             | MW-2 13" ad<br>5.0'-15' long<br>spiral<br>spiral  | 0 ppm                | Fgc - clayey silt, soft, trace<br>organics                                                             |
| 7.5'-<br>10.0'  | LI Brown<br>and Grey<br>Homod | Moist            | MW-2 13" ad<br>7.5'-15' long<br>spiral<br>spiral  | 0 ppm                | Fgc - soft, clayey-silt                                                                                |
| 10.0'-<br>12.5' | Brown and<br>Grey             | Moist            | MW-2 13" ad<br>10.0'-15' long<br>spiral<br>spiral | 0 ppm                | Fgc - Soft, clayey-silt                                                                                |
| 12.5'-<br>15.0' | Brown and<br>Grey             | Moist            | MW-2 13" ad<br>12.5'-15' long<br>spiral<br>spiral | 0 ppm                | Fgc - Very soft clayey-silt                                                                            |

\* CONTINUE TO ALTERNATE TO DATUM ASK.

|                                    |                            |  |  |  |
|------------------------------------|----------------------------|--|--|--|
| 18) OBSERVATIONS<br>(WATER LEVELS) | Elevation Measuring Point: |  |  |  |
|                                    | Date:                      |  |  |  |
|                                    | Level:                     |  |  |  |
|                                    | Time:                      |  |  |  |

# IOWA DEPARTMENT OF NATURAL RESOURCES

## Soil Boring Log - Part I

### Submit to:

IOWA DEPT OF NATURAL RESOURCES  
ATTN: UST  
900 EAST GRAND AVENUE  
DES MOINES, IA 50319-0034

For instructions on completion call:  
(515) 281-6693

Sheet 2 of 2

### READ PART II BEFORE COMPLETING

|                                                |                                             |
|------------------------------------------------|---------------------------------------------|
| FACILITY NAME                                  | 1) <u>The Marley Pump Company</u>           |
| FACILITY ADDRESS                               | 2) <u>500 E 54th Street, Des Moines, IA</u> |
| WELL CONTRACTOR REGISTRATION                   | 3) <u>ID 00072 01</u>                       |
| DRELLING METHOD                                | 4) <u>PA (Hollow Stem Auger)</u>            |
| BORING DEPTH (FEET) X BORING DIAMETER (INCHES) | 5) <u>25 ft x 6 1/4 inches</u>              |

| BORING # | START DATE | END DATE  | REFERENCE ELEVATION | UST NUMBER  | LUST NUMBER |
|----------|------------|-----------|---------------------|-------------|-------------|
| 914W-2   | 7/9/14/92  | 8/9/14/92 | 9) 99.71            | 10) 7910056 | 11) 8417884 |

| DEPTH<br>(12)   | COLOR<br>(13)             | MOISTURE<br>(14) | SAMPLE<br>(15) No.   type                                | PID READING<br>(16) | GEOLOGICAL DESCRIPTION<br>(17) (See Instructions on Reverse Side)                                                      |
|-----------------|---------------------------|------------------|----------------------------------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------|
| 6.0'-<br>17.5'  | Brown and<br>Grey Mottled | Moist            | HW-2 13" od<br>5c- 5' long<br>7.5' Split<br>1' Spoon     | 0 ppm               | Fgc- soft clayey silt                                                                                                  |
| 17.5'-<br>20.0' | Brown and<br>Grey Mottled | Very Moist       | HW-2 13" od<br>17.5'- 5' long<br>20.0' Split<br>1' Spoon | 0 ppm               | Fgc- soft, clayey silt                                                                                                 |
| 20.0'-<br>22.5' | Grey                      | Moist            | HW-2 13" od<br>20.0'- 5' long<br>22.5' Split<br>1' Spoon | 0 ppm               | Fgc- very soft, silty clay                                                                                             |
| 22.5'-<br>25.0' | Grey<br><br>Grey          | Damp<br><br>Dry  | HW-2 13" od<br>22.5'- 5' long<br>25.0' Split<br>1' Spoon | 0 ppm               | Fgc- silty clay with some medium<br>to fine sand<br>Fgc- hard, dry, glacial till<br>(clay with many fine pebbles) 1 ft |
|                 |                           |                  |                                                          | END of              | Boring                                                                                                                 |
|                 |                           |                  |                                                          |                     |                                                                                                                        |
|                 |                           |                  |                                                          |                     |                                                                                                                        |

\* CONTINUE TO 100' ALB/TRA, DATE 4/4/95

|                                    |                            |  |  |
|------------------------------------|----------------------------|--|--|
| 18) OBSERVATIONS<br>(WATER LEVELS) | Elevation Measuring Point: |  |  |
|                                    | Date:                      |  |  |
|                                    | Level:                     |  |  |
|                                    | Time:                      |  |  |

# IOWA DEPARTMENT OF NATURAL RESOURCES

## Soil Boring Log - Part I

### Submit to:

IOWA DEPT. OF NATURAL RESOURCES

ATTN: UST

800 EAST GRAND AVENUE

DES MOINES, IA 50319-0034

For questions or assistance call:

(515) 281-8693

Sheet 1 of 2

### READ PART II BEFORE COMPLETING

|                                                |                                        |
|------------------------------------------------|----------------------------------------|
| FACILITY NAME                                  | 1) <u>The Morley Pump Company</u>      |
| FACILITY ADDRESS                               | 2) <u>500 E 59th St. Davenport, IA</u> |
| WELL CONTRACTOR REGISTRATION                   | 3) <u>ID 00072 01</u>                  |
| DRILLING METHOD                                | 4) <u>PA (Hollow Stem Auger)</u>       |
| BORING DEPTH (FEET) X BORING DIAMETER (INCHES) | 5) <u>25 ft x 6.44 inches</u>          |

| BORING # | START DATE | END DATE | REFERENCE ELEVATION | UST NUMBER  | LUST NUMBER |
|----------|------------|----------|---------------------|-------------|-------------|
| 01402    | 7/9/1992   | 8/9/1992 | 99.42'              | 10) 7910056 | 11) BLSB4   |

| DEPTH<br>(12)   | COLOR<br>(13)                        | MOISTURE<br>(14) | SAMPLE<br>15) No. type                                            | PID READING<br>(16) | GEOLOGICAL DESCRIPTION<br>(17) (See Instructions on Reverse Side) |
|-----------------|--------------------------------------|------------------|-------------------------------------------------------------------|---------------------|-------------------------------------------------------------------|
| 0-2.5'          | Brown                                | Damp             | MW-3<br>13" d<br>2.5' long<br>split<br>borehole                   | Open                | FGc- silt with some clay,<br>1/4" fine sand                       |
| 2.5'-<br>5.0'   | Brown                                | Damp             | MW-3<br>13" d<br>2.5'-<br>5.0'<br>15' long<br>split<br>borehole   | Open                | FGc- soft, clayey silt, 1/4" fine sand, trace organics            |
| 5.0'-<br>7.5'   | Light Brown with<br>Grey mottling    | Damp             | MW-3<br>13" d<br>5.0'-<br>7.5'<br>15' long<br>split<br>borehole   | Open                | FGc- very soft, clayey silt                                       |
| 7.5'-<br>10.0'  | Brown with<br>Grey mottling          | Damp to<br>Moist | MW-3<br>13" d<br>7.5'-<br>10.0'<br>15' long<br>split<br>borehole  | Open                | FGc- very soft, clayey silt                                       |
| 10.0'-<br>12.5' | Light Brown<br>with Grey<br>mottling | Moist            | MW-3<br>13" d<br>10.0'-<br>12.5'<br>15' long<br>split<br>borehole | Open                | FGc- very soft, clayey silt                                       |
| 12.5'-<br>15.0' | Light Brown<br>with Grey<br>mottling | Moist            | MW-3<br>13" d<br>12.5'-<br>15.0'<br>15' long<br>split<br>borehole | Open                | FGc- very soft, clayey silt                                       |

|                                    |                            |  |
|------------------------------------|----------------------------|--|
| 18) OBSERVATIONS<br>(WATER LEVELS) | Elevation Measuring Point: |  |
|                                    | Date:                      |  |
|                                    | Level:                     |  |
|                                    | Time:                      |  |



# IOWA DEPARTMENT OF NATURAL RESOURCES

## Soil Boring Log - Part I

READ PART II BEFORE COMPLETING

Project No:

IOWA DEPT OF NATURAL RESOURCES

ATTN: LIST

900 EAST GRAND AVENUE

DES MOINES, IA 50319-0034

For questions or assistance call:

(515) 281-8693

Sheet 2 of 2

|                                                |  |
|------------------------------------------------|--|
| FACILITY NAME                                  |  |
| 1) The Marlin Pump Company                     |  |
| FACILITY ADDRESS                               |  |
| 2) 500 E 5th Street, Des Moines, IA            |  |
| WELL CONTRACTOR REGISTRATION                   |  |
| 3) ID 00072 01                                 |  |
| DRILLING METHOD                                |  |
| 4) PA (Hollow Stem Auger)                      |  |
| BORING DEPTH (FEET) X BORING DIAMETER (INCHES) |  |
| 5) 25 ft x 6 1/4 inches                        |  |

| BORING # | START DATE | END DATE   | REFERENCE ELEVATION | LIST NUMBER | LIST NUMBER  |
|----------|------------|------------|---------------------|-------------|--------------|
| 9) MW-3  | 7) 9/16/92 | 8) 9/16/92 | 9) 99.45            | 10) 7910054 | 11) 92T's 84 |

| DEPTH<br>(12)   | COLOR<br>(13) | MOISTURE<br>(14) | SAMPLE<br>(15) No. type                                   | PID READING<br>(16) | GEOLOGICAL DESCRIPTION<br>(17) (See Instructions on Reverse Side)                                   |
|-----------------|---------------|------------------|-----------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------|
| 50'-<br>17.5'   | Grey          | Moist            | MW-3 13' o.d.<br>50'-15' long<br>17.5' split<br>special   | 144 ppm             | F6c- Very soft, clayey silt                                                                         |
| 17.5'-<br>20.0' | Grey          | Moist            | MW-3 13' o.d.<br>17.5'-15' long<br>20.0' split<br>special | 0 ppm               | F6c- Very soft, clayey silt                                                                         |
| 20.0'-<br>22.5' | Grey          | Moist<br>Dry     | MW-3 13' o.d.<br>20.0'-15' long<br>22.5' split<br>special | 0 ppm               | F6c- Very soft, clayey silt<br>(co. 20.0')<br>F6d- hard, clay with fine pebbles<br>(yellowish silt) |
| 22.5'-<br>25.0' | Grey          | Dry              | MW-3 13' o.d.<br>22.5'-15' long<br>25.0' split<br>special | 0 ppm               | F6c- glaucl T.11                                                                                    |
|                 |               |                  |                                                           |                     |                                                                                                     |
|                 |               |                  |                                                           |                     |                                                                                                     |

(18) OBSERVATIONS  
(WATER LEVELS)

Elevation Measuring Point:

Date:

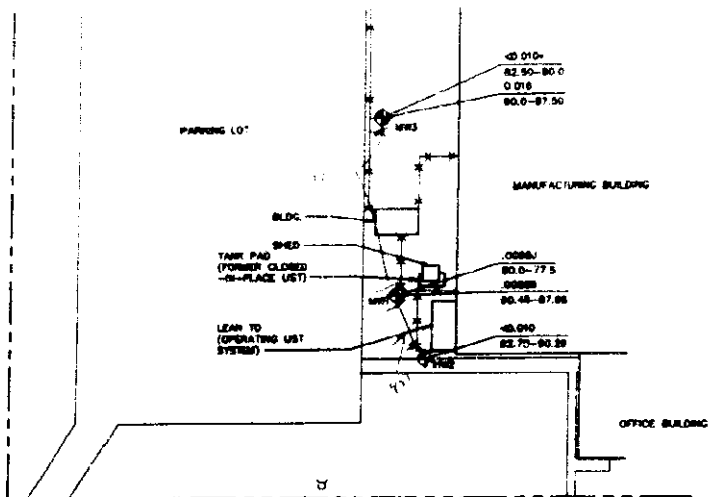
Level:

Time:

DNR FORM (10/90)

Continued on the Back

542-1392



#### LEGEND

- - - - - PROPERTY LINE
- FENCE
- MW FIRE HYDRANT
- MW MONITORING WELL

#### NOTE

MW1, MW2, AND MW3 WERE USED TO DETERMINE 1.5-3.0 HYDRAULIC CONDUCTIVITY. A LABORATORY PERMEABILITY TEST WAS CONDUCTED FROM SOIL COLLECTED FROM MW4.

- DUPLICATE SAMPLE YIELD EXACT RESULTS.

0.005M = CONC. OF TPH IN RPM  
80.45-87.88 SOIL SAMPLE ELEVATION

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF CLARITY

ELEVATIONS WERE MEASURED AGAINST AN ARBITRARY SITE DRAIN AT AN ELEVATION OF 100 FEET.

(NOT ENOUGH DATA POINTS FOR A PLUME MAP)

## SOIL CONTAMINATION PLUME MAP

The Marley Pump Company  
500 E. 58th Street  
Des Moines, Iowa

METCALF & GIBBY

**APPENDIX 7**

**IV(B) - DNR FORM 542-1392, MONITORING WELL CONSTRUCTION DIAGRAM**

# Boring Log - Part III

## Temporary Monitor Well Construction

INDECO, Inc.  
WELL CONTRACTOR NAME  
Id 00072 01  
WELL CONTRACTOR REGISTRATION #

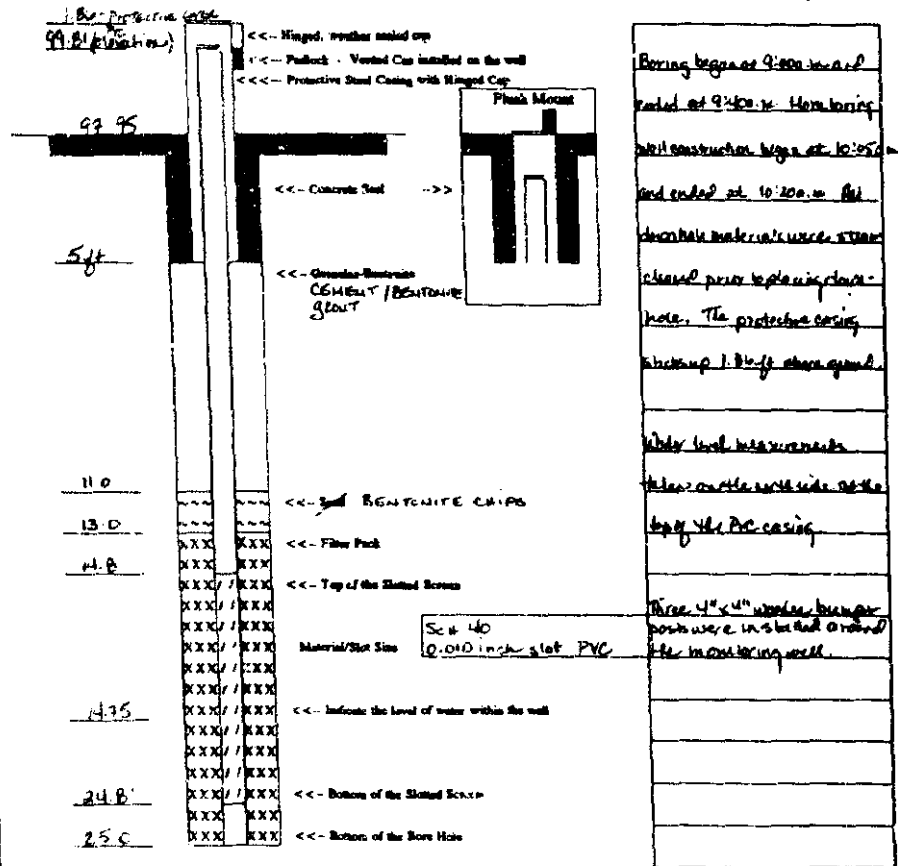
BORING NUMBER: M00-1  
DATE/TIME START: 9/16/92 14:00:00  
DATE/TIME ENDED: 9/16/92 19:40:00  
DRILLING METHOD: PA / Hollow Stem Auger  
LOGGED BY: Ken Bullen  
Hutchins & Eddy, Inc.

LABEL ALL MEASUREMENTS and make comments as necessary

### MEASUREMENTS

### DESCRIPTION

### COMMENTS



NOTE: The top of the casing may be constructed flush with the ground.

# Boring Log - Part III

## Temporary Monitor Well Construction

|                                |          |
|--------------------------------|----------|
| TALCO INC.                     |          |
| WELL CONTRACTOR NAME           |          |
| ID                             | 00072 01 |
| WELL CONTRACTOR REGISTRATION # |          |

|                  |                     |
|------------------|---------------------|
| BORING NUMBER:   | MW-2                |
| DATE/TIME START: | 11/16/92 1:10 PM    |
| DATE/TIME ENDED: | 11/16/92 1:20 PM    |
| DRILLING METHOD: | PA                  |
| LOGGED BY:       | Mateo & Gilly, Inc. |

LABEL ALL MEASUREMENTS and make comments as necessary

### MEASUREMENTS

### DESCRIPTION

### COMMENTS

|                              |  |  |  |
|------------------------------|--|--|--|
| 1.92 Protective Steel Casing |  |  |  |
| 09.31 ft.                    |  |  |  |
| 27.79                        |  |  |  |
| 5 ft                         |  |  |  |
| 9.0                          |  |  |  |
| 11.5                         |  |  |  |
| 13.5                         |  |  |  |
| 17.59                        |  |  |  |
| 20.5                         |  |  |  |
| 25.0                         |  |  |  |

|                                                  |                |
|--------------------------------------------------|----------------|
| <<-- Hinged, weather sealed cap                  |                |
| <<-- Pulllock - Vented Cap installed on the well |                |
| <<-- Protective Steel Casing with Hinged Cap     |                |
| <<-- Concrete Seal                               |                |
| <<-- Quarter Rounder Concrete / Bandwidth Guard  |                |
| <<-- Spill Resistant PE Casing                   |                |
| <<-- Filter Pack                                 |                |
| <<-- Top of the Slotted Screen                   |                |
| Material/Grain Size                              | 0.010 inch 364 |
| <<-- Indicate the level of water within the well |                |
| <<-- Bottom of the Slotted Screen                |                |
| <<-- Bottom of the Bore Hole                     |                |

|             |
|-------------|
| Flush Mount |
|-------------|

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Boring begins at 11:10 AM and ended at 1:20 PM. Monitoring well construction begins at 11:20 AM and continued until 12:40 PM. The monitoring well was completed later in the day - perforated. Steel casing and concrete seal. The protective casing structure is approximately 1.92 ft. The 4" x 4" bamboo poles (props) were installed around the well. Daily level measurements were taken on the north side of the top of the PVC casing. The bottom of the borehole was filled with bamboo chips and sealed the top. |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

NOTE: The top of the casing may be constructed flush with the ground.

# Boring Log - Part III

## Temporary Monitor Well Construction

**INDECO, INC**  
 WELL CONTRACTOR NAME  
 ID 00072 01  
 WELL CONTRACTOR REGISTRATION #

BORING NUMBER: HW-3  
 DATE/TIME START: 11/10/92 1:30pm  
 DATE/TIME ENDED: 11/10/92 2:05pm  
 DRILLING METHOD: PA / Hollow Stem  
 LOGGED BY: Markley & Eddy, Inc.

LABEL ALL MEASUREMENTS and make comments as necessary

### MEASUREMENTS

### DESCRIPTION

### COMMENTS

1.92 Protective Casing Safety

99.42 ft

47.50

5 ft

6 ft

9 ft

11 ft

18.5 ft

21 ft

25 ft

<<< Hinged, weather sealed cap  
 <<< Padlock - Vented Cap installed on the well  
 <<< Protective Steel Casing with Hinged Cap

<<< Concrete Seal

<<< Granular Backfill

<<< Small Backfill Chips

<<< Filter Pack

<<< Top of the Slotted Screen

Material/Slot Size

0.010 inch slot

<<< Indicate the level of water within the well

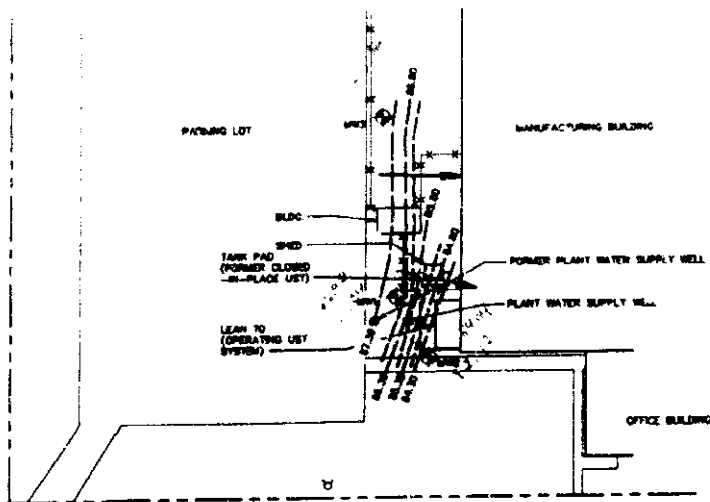
<<< Bottom of the Slotted Screen

<<< Bottom of the Bore Hole








Flush Mount

Boring began at 1:30pm and ended at 2:05pm. Monitoring well construction began at approximately 1:30 and ended at approximately 2:05pm. The monitoring well was completed later in day. Protective casing and cement grout. The protective casing sticks up 1.92 ft from ground surface. Three wooden 4" x 4" bumper posts were installed around the monitoring well. Water level was measured on the north side at the top of PVC casing. Filled bottom of borehole with approximately 3 ft of backfill. then added sand to the appropriate depth of well.

NOTE: The top of the casing may be constructed flush with the ground.



### LEGEND

-  = PROPERTY LINE  
 = CONTOUR LINE  
 = FENCE  
 = FIRE HYDRANT  
 = MONITORING WELL  
 = WELL  
 = APPARENT GROUNDWATER FLOW DIRECTION

GROUNDWATER ELEVATION DATA COLLECTED  
ON OCTOBER 1, 1962.

ELEVATIONS ARE BASED UPON AN ARBITRARY  
SITE DATUM AND ELEVATION OF 100 FEET.

MONITORING WELLS MW1, MW2, AND MW3, WERE USED TO DETERMINE HYDRAULIC CONDUCTIVITY.

**GROUNDPWATER FLOW DIRECTION - EAST**

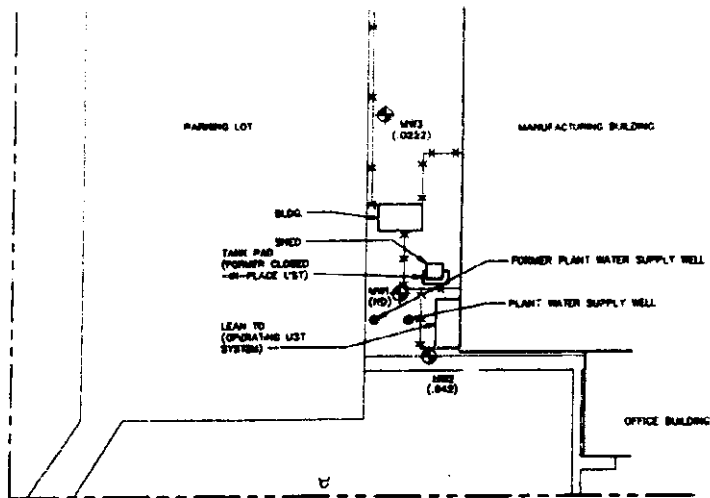
# GROUNDWATER CONTOUR MAP

**The Marley Pump Company**  
500 E. 59th Street  
Des Moines, Iowa

NATIONAL &amp; REGIONAL







TOXIC PRODUCT IS NOT PRESENT

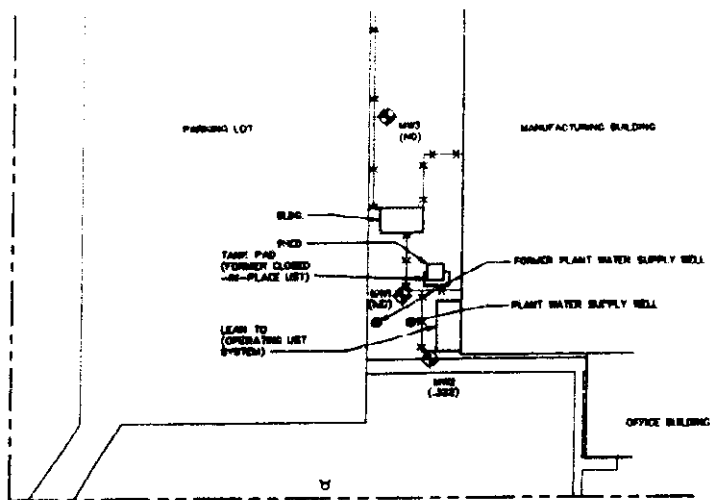
TOXIC LEVELS DID NOT EXCEED THE  
IOWA STATE ACTION LEVEL 0.48 mg/L  
WAS, NO CONTOURS WERE CONSTRUCTED

INSUFFICIENT DATA FOR CONTOUR

# **TOLUENE GROUNDWATER CONTAMINATION PLUME MAP**

The Marley Pump Company  
500 E. 50th Street  
Des Moines, Iowa

METCALF & SNEY



#### LEGEND

- = PROPERTY LINE
- = FENCE
- HY = FIRE HYDRANT
- MW1 = MONITORING WELL
- W = WELL
- ND = NONE DETECTED
- (.0235) = UNITS OF mg/L

FREE PRODUCT NOT PRESENT

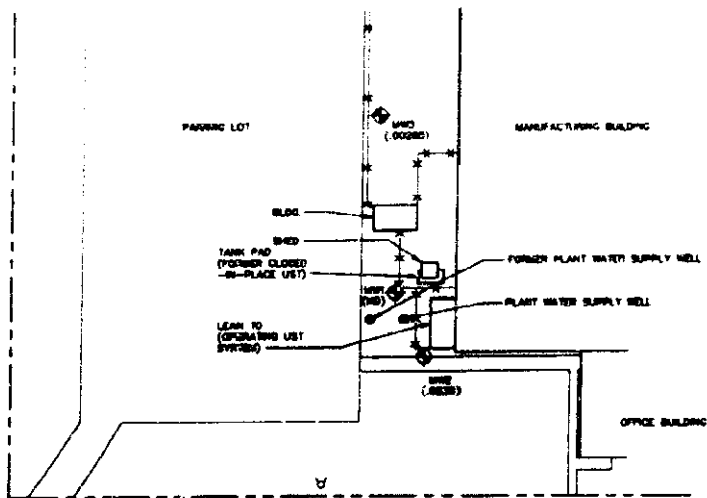
ETHYL BENZENE CONCENTRATIONS DO NOT EXCEED THE MIN. STATE ACTION LEVEL OF 12.0 mg/L. NO PLUME WAS OBSERVED.

INSUFFICIENT DATA FOR CONTOURS

### ETHYL BENZENE GROUNDWATER CONTAMINATION PLUME MAP

The Marley Pump Company  
500 E. 80th Street  
Davenport, Iowa

METCALF & BERRY



## LEGEND

- \_\_\_\_\_ = PROPERTY LINE  
 \_\_\_\_\_ = FENCE  
 U = FIRE HYDRANT  
 MW3 = MONITORING WELL  
 W = WELL  
 ND = NONE DETECTED  
 (CUBS) = UNITS OF Mq/L  
 J = ESTIMATED VALUE  
 OBTAINED FROM BELOW  
 LABORATORY DETECTION  
 LIMIT

**FALSE PRODUCT NOT PRESENT**

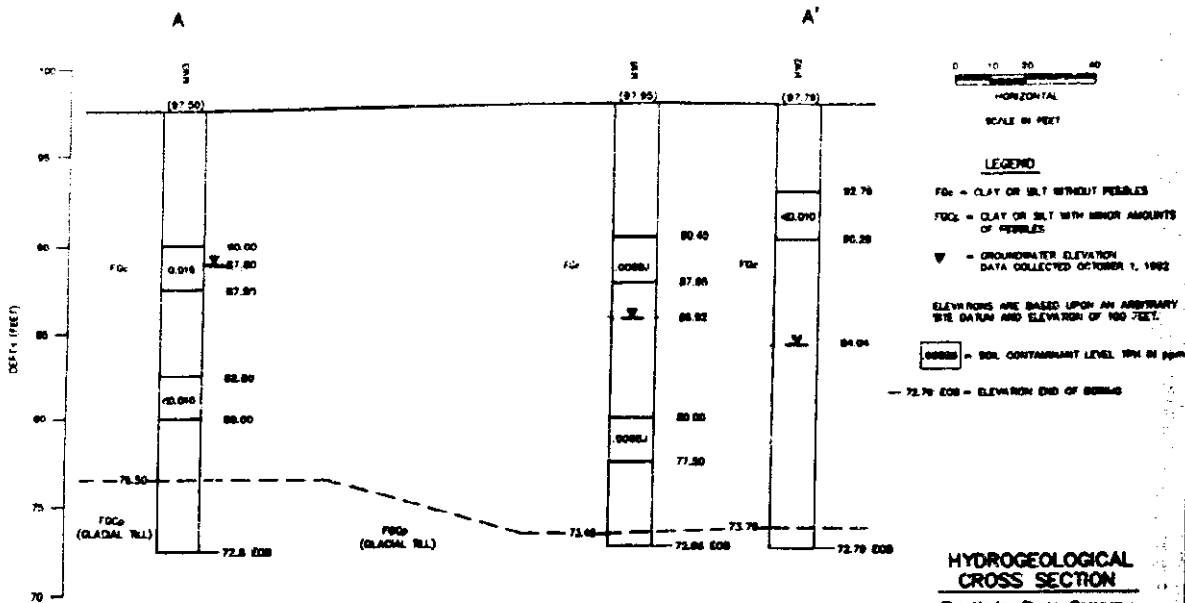
HYDRAINE CONCENTRATIONS DID NOT EXCEED THE ROMA SAFETY ACTION LEVEL OF .7 mg/L. THERE, NO FLAME MAP WAS CONSTRUCTED.

### INSUFFICIENT DATA FOR CYNTHIA

**XYLENE GROUNDWATER  
CONTAMINATION  
PLUME MAP**

The Murray Pump Company  
500 E. 87th Street  
Des Moines, Iowa

**ARTICLES** 11



**APPENDIX 11**

**VIII - RECEPTOR SURVEY MAP**

A storm sewer clean-out is located at the south west corner of the testing area. A draining trough is located at the southern end of the testing area. The depth and construction of this trough is unknown. Please see the attached figure for further details.

A buried telephone cable is located west of the facility and runs northwest-southeast and east-west. The depth at which this cable is buried is unknown.

The depth at which all the aforementioned lines are buried are not affected by fluctuating groundwater levels. The groundwater at this site ranges from approximately 11 feet below grade to 15 feet below grade.

All power lines are located above ground.

#### VIII - Groundwater Well Survey

Three deep wells exist on-site: <sup>(1)</sup> former plant water supply well, plant water supply well, and a former test well. Please refer to the "Overall Site Plan Map" for further details.

- Former plant water supply well - Well logs are not available for this water supply well. This well used to supply water to the plant for its operations. However, it is currently not in service. This well is not plugged. The depth of this well is approximately 240 feet below grade. This well is located approximately 20 feet west of the testing facility lean-to.
- Water supply well - Well logs are not available for this water supply well. This well currently supplies water to the plant for all purposes: industrial and drinking. The depth of this well is approximately 240 feet below grade. This well is located approximately 5-feet west from the testing facility lean-to.
- Test well - A 6-inch diameter, 200-foot deep test well was drilled on the facility property in 1979. The well was used to test Marley Pump Company's jet pumps. This well is located in the testing facility.

The owner of all three wells is the Marley Pump Company located at 506 East 59th Street, Davenport, Iowa.

There are no off-site wells within 1,000 feet of the UST.

#### VIII - Groundwater Barriers Survey

One of Marley Pump Company's parking lots for this facility is located approximately 40-feet west of the testing facility lean-to. Additional parking lots are located on the other side of the facility, approximately 650-feet east of the testing facility lean-to and approximately

180-feet south of the testing facility lease-to. The building foundation for this facility is approximately 3.5 feet below grade. This does not pose a barrier for groundwater because groundwater, as measured in the three groundwater monitoring wells, ranges from approximately 11 feet to 15 feet below grade. East 59th street is located south and approximately 130-feet south of the testing facility lease-to.

### VIII - Receptor Survey

After evaluating the U.S.G.S. 7.5 minute quadrangle and conducting a site survey, surface water bodies such as streams, lakes, and/or ponds are not located within 1,000 feet of the designated petroleum impacted area. The closest surface water body, Goose Creek, is greater than 1,000 feet from the impacted area.

Given the distance of the surface water body from the impacted area and the hydraulic conductivity baildown tests conducted on all three monitoring wells (MW-1:  $7.88 \times 10^{-4}$  cm/sec, MW-2:  $9.3 \times 10^{-4}$  cm/sec, and MW-3:  $7.9 \times 10^{-4}$  cm/sec), the impacted area is believed to be very localized. Therefore, it is not anticipated that any surface water body will be affected. Furthermore, it is not anticipated that any surface water body sampling will be conducted.

### VIII - Conduit Survey

Seneca Environmental Services (April 1992), had stated in their environmental report that a large metal pipe ran through the tank pit excavation from the water well located approximately 20-feet west of the site in the down-gradient direction. The pipe is approximately two-feet below the surface of the ground and is set directly in the clay soils, with no sand backfill around it. The pipe is situated at a level above the midline of the proposed tanks and the tank are double-walled construction. Seneca had indicated that it was not likely that this pipe will act as a conduit for any hydrocarbon migration if a leak occurred in one of the underground storage tanks. Please see the attached figure for further details.

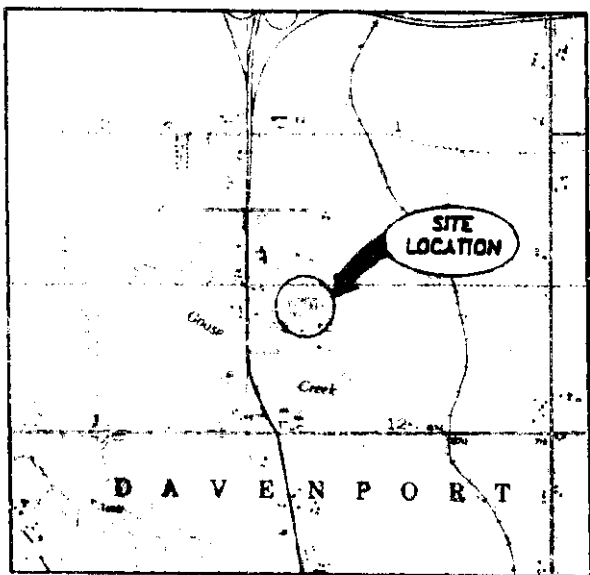
*Refer to 81511*  
A four-inch diameter steel gas main, buried four-feet below grade, runs north-south. The buried line is located east of the above ground piping area and the closed-in-place UST. The backfill for this buried pipeline is unknown. Please see the attached figure for further details.

A six-inch diameter steel water main, buried 67 inches below grade, runs north-south. This buried line is located west of the steel gas main and directly south of the closed-in-place UST. The backfill for this line is unknown. Please see the attached figure for further details.

A ten-inch diameter concrete roof drain (storm sewer), buried two-feet below grade, runs north-south and east-west. The east-west extension of this line intersects the new underground storage facility between tanks 2 and 3. The backfill for this buried line is unknown. Please see the attached figure for further details.

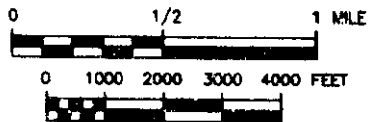
A by-pass water main is located west of the closed-in-place UST and south of the new testing facility. The depth at which this line is buried is unknown. The expected diameter of this line is six-inches. The backfill for this buried line is unknown. Please see the attached figure for further details.





SOURCE: U.S.G.S. DAVENPORT EAST, IOWA - ILL. (1975)

SCALE: 1:24000



RECEPTOR SURVEY MAP  
SURFACE WATER BODY SURVEY

**The Marley Pump Company**  
500 E. 59th Street  
Davenport, Iowa

**The Marley Pump Company**  
500 E. 59th Street  
Davenport, Iowa

METCALF & EDDY



**The Morley Pump Company**  
500 E. 59th Street  
Davenport, Iowa



○ Farmer

Water  
Snot-off  
Valve

சென்னை, 15.05.2019

2186

C-18 v Zoc; 702 v 27, 2

**FOR  
CROSS-  
INDEXING**

500  
T-1000



7-11  
6-11  
- 2000

U230/115 30Amf

2008

**CONCEPT**

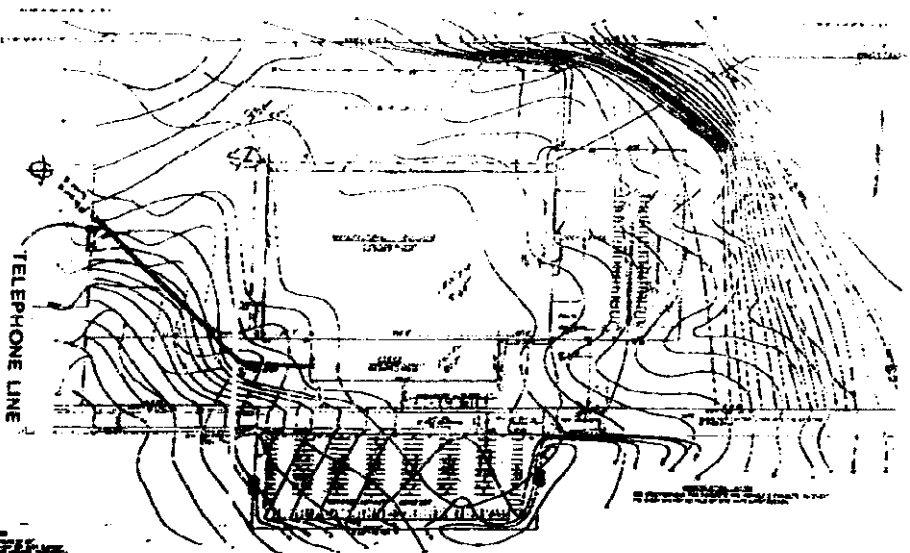
ENG. LAB. -

RECEPTOR SURVEY MAP  
CONDUIT SURVEY

The Marley Pump Company  
500 E. 59th Street  
Davenport, Iowa

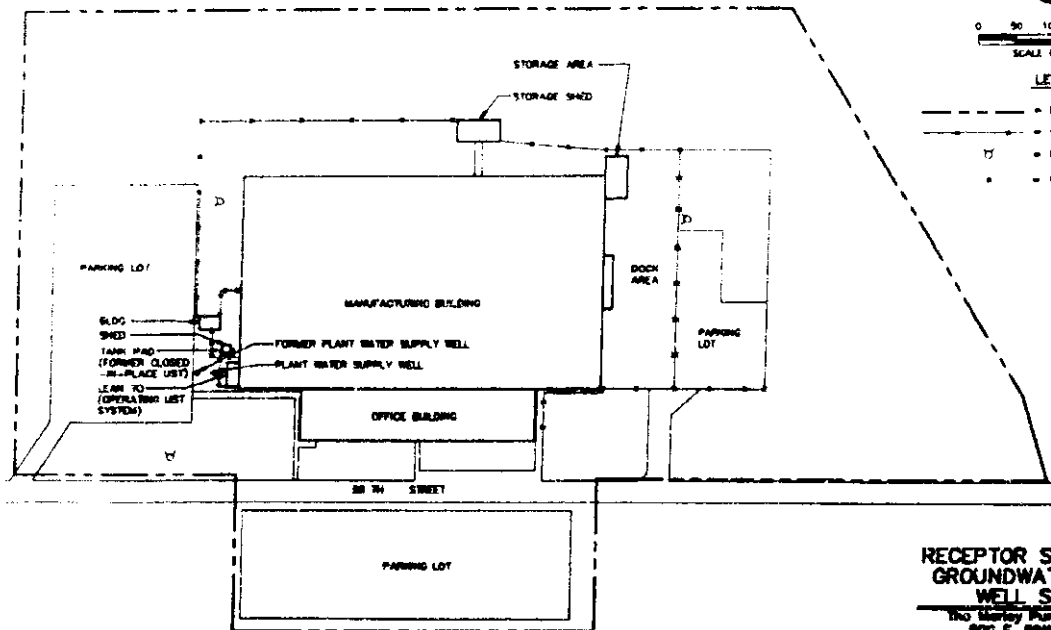
**METCALF & EDDY**

NOT TO SCALE



# RECEPTOR SURVEY MAP CONDUIT SURVEY

The Marley Pump Company  
500 E. 59th Street  
Davenport, Iowa



**RECEPTOR SURVEY MAP  
GROUNDWATER WATER  
WELL SURVEY**

The Morley Pump Company  
300 E. 38th Street  
Des Moines, Iowa

MEYER & BRY

APPENDIX 12

X - LABORATORY DATA SHEETS

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1701W. Albany - Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 FIERCE PLAZA, SUITE 1500 WEST  
ITASCA ILL 60143  
ATTN: DENNIS STOREY

REPORT: 11078.0171

DATE: 09-25-92

SAMPLE MATRIX: SOIL  
SWL# 11078.01  
METHOD REFERENCE: EPA 8210  
DATE SAMPLED: 9-15-92  
DATE SUBMITTED: 9-18-92  
DATE ANALYZED: 9-23-92  
ANALYST: MARLENE RUMBLE  
SAMPLE ID: MW-1 7.5-11

| PARAMETER                                     | DET.<br>LIMIT | UNIT | RESULTS |
|-----------------------------------------------|---------------|------|---------|
| <u>TOTAL AROMATIC POLYCYCLIC HYDROCARBONS</u> |               |      |         |
| GASOLINE                                      |               | ug/g | 8.9 J   |

## QA/QC SURROGATE RECOVERY

4-BROMOFLORENZENE 88%

- NB = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE; CONCENTRATION BELOW LIMIT OF QUANTITATION  
I = SAMPLE COULD NOT BE QUANTITATED DUE TO MATRIX INTERFERENCE

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA ILL 60143  
ATTN: DENNIS STOREY

REPORT: 11078.0271

DATE: 09-25-92

SAMPLE MATRIX: SOIL  
TEST NO: 11078.0271  
METHOD REFERENCE: EPA 8210  
DATE RECEIVED: 09-21-92  
DATE SUBMITTED: 09-21-92  
DATE ANALYZED: 09-22-92  
ANALYST: MARLENE SUMMERS  
LABOR. I.D. NO.: 11078.0271

| PARAMETER                                        | DET.<br>LIMIT | UNIT  | RESULTS |
|--------------------------------------------------|---------------|-------|---------|
| <u>INITIAL REMEDIABLE PETROLEUM HYDROCARBONS</u> |               |       |         |
| GASOLINE                                         | 10.0          | ug/kg | 6.8 J   |

## QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 81%

- ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
S = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I = INABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE



# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Aikens • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA ILL 60143  
ATTN: DENNIS STOREY

REPORT: 11078.03TI

DATE: 09-25-92

SAMPLE MATERIAL: SOIL  
SWITCH: 11 TALL  
METHOD REFERENCE: EPA-1  
DATE SAMPLED: 09-18-92  
DATE SUBMITTED: 09-19-92  
DATE ANALYZED: 09-22-92  
FACILITY: MARVEL FUME LTD.  
SAMPLE ID: MARV-5015

| PARAMETER                                        | DET.<br>LIMIT | UNIT  | RESULTS |
|--------------------------------------------------|---------------|-------|---------|
| <u>TOTAL PAHIS AND PHTHS BY HPLC/DECAFFENING</u> |               |       |         |
| GASOLINE                                         | 10.0          | ug/kg | ND      |

## QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 87%

- ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 FIERCE PLAZA, SUITE 1500 WEST  
ITASCA IL 60140  
ATTN: DENNIS STOREY

REPORT: 11078.04TI

DATE: 09-25-92

SAMPLE MATRIX: SOIL  
SAMPLER: 111 DEL. 2  
METHOD REFERENCE: 8140  
DATE SAMPLED: 09-14-92  
DATE SUBMITTED: 09-15-92  
DATE ANALYZED: 09-16-92  
PROJECT: WASTE FARM #2  
SAMPLE ID: 111 DEL. 2 T10-11

| PARAMETER                                        | DET.<br>LIMIT | UNIT | RESULTS |
|--------------------------------------------------|---------------|------|---------|
| <u>TOTAL CHLORINATED PESTICIDES HYDROCARBONS</u> |               |      |         |
| BASLINE                                          | 10.0          | ug/g | 16.6    |

## QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 90%

- ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE; CONCENTRATION BELOW LIMIT OF QUANTITATION  
I = DUE TO QUANTITATION OR TO MATRIX INTERFERENCE

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA ILL 60143  
ATTN: DENNIS STOREY

REPORT: 11078.05TI

DATE: 09-23-92

SAMPLE MATRIX: SOIL  
CASE # 11078.05  
METHOD REFERENCE: 4240  
DATE SAMPLED: 09-18-92  
DATE RECEIVED: 09-18-92  
DATE ANALYSIS: 09-22-92  
ANALYST: MARLENE HUNTER  
LAB # 110 MW-15-17-92

| PARAMETER                                       | DET.<br>LIMIT | UNIT  | RESULTS |
|-------------------------------------------------|---------------|-------|---------|
| <u>TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS</u> |               |       |         |
| GASOLINE                                        | 10.00         | ug/kg | ND      |

## QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 98%

- ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
E = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 FIERCE PLAZA, SUITE 1500 WEST  
DASCA ILL 60243  
ATTN: DENNIS STOREY

REPORT: 11078.0611

DATE: 09-25-92

SAMPLE MATRIX: SOIL  
CWD # 11078.0611  
METHOD REFERENCE: D4-1  
DATE SAMPLED: 09-15-92  
DATE SUBMITTED: 09-16-92  
DATE ANALYZED: 09-21-92  
PROJECT: MURDER RUMFOLD  
SAMPLE ID: MW TO 15 17.5

| PARAMETER                                     | DET.<br>LIMIT | UNIT  | RESULTS |
|-----------------------------------------------|---------------|-------|---------|
| <u>TOTAL FLEADABLE PETROLEUM HYDROCARBONS</u> |               |       |         |
| GASOLINE                                      | 1.000         | ug/kg | ND      |

## QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 91%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
E = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
Y = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Suite "C" • Broken Arrow, Oklahoma 74012 • 918-251-2838 • FAX: 918-761-7660

## LABORATORY QUALITY CONTROL SEQUENCE

METHOD : SW846-8015 (MODIFIED) (IOWA METHOD)  
SEQUENCE DATE : 09/22/92  
INSTRUMENT ID. : 6

### LABORATORY BLANK

|                          |                             |
|--------------------------|-----------------------------|
| MATRIX : Water           | DATE NO. : BLANK            |
| SAMPLE ID. : BLANK       | FILENAME : 6092292\01171101 |
| SAMPLE AMOUNT : 5.0 ml   | DILUTION FACTOR: 1          |
| ANALYSIS DATE : 09/22/92 |                             |
| ANALYSIS TIME : 09:28    |                             |

| COMPOUND | QUANTITATION<br>LIMIT (ug/L) | AMOUNT FOUND<br>(ug/L) |
|----------|------------------------------|------------------------|
| GASOLINE | 10.0                         | 10.0 ND                |

SUBSTITUTE RECOVERY (4-BROMOFLUOROBENZENE) : 101 %

### MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

| COMPOUND | SPIKE CONC.<br>(ug/Kg) | 5819.04<br>SAMPLE CONC.<br>(ug/Kg) * | 5819.04MS<br>MATRIX SPIKE<br>CONC. (ug/Kg) * | PERCENT<br>RECOVERY |
|----------|------------------------|--------------------------------------|----------------------------------------------|---------------------|
| GASOLINE | 500.0                  | 16.6                                 | 479.1                                        | 92.5 %              |

| COMPOUND | 5819.04MS<br>MATRIX SPIKE<br>DUPLICATE<br>CONC. (ug/Kg) * | PERCENT<br>RECOVERY | RECOVERY PERCENT<br>DIFFERENCE |
|----------|-----------------------------------------------------------|---------------------|--------------------------------|
| GASOLINE | 487.2                                                     | 94.1 %              | ( 1.7) %                       |

\* DILUTION FACTORS NOT APPLIED TO THESE CONCENTRATIONS

SWL-111 CLIENT SAMPLE WORK-S 7.5-10

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 PIERCE PLAZA, SUITE 1300 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STDRY

REPORT: 11239.01BX

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SWLO # 11239.01  
METHOD REFERENCE: SWB44-8020  
DILUTION FACTOR: 1  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-06-92  
PROJECT: HARLEY PUMP COMPANY  
SAMPLE ID: MW-1

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULTS |
|---------------------------|-----------------|------|---------|
| <u>GAS CHROMATOGRAPHY</u> |                 |      |         |
| BENZENE                   | 1.0             | ug/L | ND      |
| TOLUENE                   | 1.0             | ug/L | ND      |
| ETHYLBENZENE              | 1.0             | ug/L | ND      |
| XYLENES                   | 1.0             | ug/L | ND      |

QA SEQUENCE NO: 38240  
QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE (65-135%)      102%

- E = ESTIMATED VALUE (ABOVE LINEAR RANGE)  
ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE; CONCENTRATION BELOW LIMIT OF QUANTITATION  
A = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.  
SM = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION 824/9-86, THIRD EDITION, NOVEMBER 1986

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STORY

REPORT: 11239.0111

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SWLO # 11239.01  
METHOD REFERENCE: GA-1  
DILUTION FACTOR: 1  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-05-92  
PROJECT: MAKLEY PUMP COMPANY  
SAMPLE ID: MW-1

| PARAMETER                                     | QUANT.<br>LIMIT | UNIT | RESULTS |
|-----------------------------------------------|-----------------|------|---------|
| <u>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</u> |                 |      |         |
| GASOLINE                                      | 10.0            | ug/L | 18.5    |

## QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 93%

- \* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.
- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
- 9 = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE
- J = ESTIMATED VALUE; CONCENTRATION BELOW LIMIT OF QUANTITATION
- I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STORY

REPORT: 11239.02BX

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SMLO #: 11239.02  
METHOD REFERENCE: SW846-B020  
DILUTION FACTOR: 50  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-07-92  
PROJECT: HARLEY PUMP COMPANY  
SAMPLE ID: MW-2

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULTS |
|---------------------------|-----------------|------|---------|
| <u>GCS CHROMATOGRAPHY</u> |                 |      |         |
| BENZENE                   | 50.0            | ug/L | 748     |
| TOLUENE                   | 50.0            | ug/L | 42.0    |
| ETHYLBENZENE              | 50.0            | ug/L | 322     |
| XYLENES                   | 50.0            | ug/L | 83.6    |

QA SEQUENCE NO: 38241  
QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE (65-133%) 106%

- E = ESTIMATED VALUE (ABOVE LINEAR RANGE)  
ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE; CONCENTRATION BELOW LIMIT OF QUANTITATION  
S = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.  
SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION 824/846, THIRD EDITION, NOVEMBER 1986



# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: MEICOLF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STORY

REPORT: 11239.02TI

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SMLO # 11239.02  
METHOD REFERENCE: OA-1  
DILUTION FACTOR: 10  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-07-92  
PROJECT: MARLEY PUMP COMPANY  
SAMPLE ID: MW-2

| PARAMETER                                     | QUANT.<br>LIMIT | UNIT | REMARKS |
|-----------------------------------------------|-----------------|------|---------|
| <u>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</u> |                 |      |         |
| GASOLINE                                      | 100.0           | ug/L | 2340.0  |

## QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 97%

- # = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.
- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
- B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE
- J = ESTIMATED VALUE; CONCENTRATION BELOW LIMIT OF QUANTITATION
- I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 W Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: ME/CALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STORY

REPORT: 11239.03BX

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SMLD N: 11239.03  
METHOD REFERENCE: SW846-B020  
DILUTION FACTOR: 5  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-08-92  
PROJECT: HARLEY PUMP COMPANY  
SAMPLE ID: MW-3

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULTS |
|---------------------------|-----------------|------|---------|
| <u>GAS CHROMATOGRAPHY</u> |                 |      |         |
| BENZENE                   | 5.0             | ug/L | ND      |
| TOLUENE                   | 5.0             | ug/L | 22.2    |
| ETHYLBENZENE              | 5.0             | ug/L | ND      |
| XYLENES                   | 5.0             | ug/L | 2.8 J   |

QA SEQUENCE NO: 33242  
QA/QC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135X) 110%

- E = ESTIMATED VALUE (ABOVE LINEAR RANGE)  
ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
S = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.  
SM = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION 85/946, THIRD EDITION, NOVEMBER 1986

# **SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STORY

REPORT: 11239.03TI

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SMD # 11239.03  
METHOD REFERENCE: CA-1  
DILUTION FACTOR: 1  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-05-92  
PROJECT: MARLE; PUMP COMPANY  
SAMPLE ID: PM-3

| PARAMETER                                     | QUANT.<br>LIMIT | UNIT | RESULTS |
|-----------------------------------------------|-----------------|------|---------|
| <b>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</b> |                 |      |         |
| GASOLINE                                      | 10.0            | ug/L | ND      |

NOTE: THE ELUTION PATTERN OF THIS SAMPLE IS NOT CONSISTANT WITH GASOLINE

## QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 93%

- B = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.
- ND = NOT DETECTED ABOVE QUANTIFICATION LIMIT
- N = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE
- J = ESTIMATED VALUE; CONCENTRATION BELOW LIMIT OF QUANTITATION
- I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

# **SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 W. Albany - Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STORY

REPORT: 11239.04BX

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SWLO # 11239.04  
METHOD REFERENCE: SW846-8020  
DILUTION FACTOR: 5  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-08-92  
PROJECT: HARLEY PUMP COMPANY  
SAMPLE ID: PW-3D

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULTS |
|---------------------------|-----------------|------|---------|
| <u>BAS CHROMATOGRAPHY</u> |                 |      |         |
| BENZENE                   | 5.0             | ug/L | ND      |
| TOLUENE                   | 5.0             | ug/L | 23.1    |
| ETHYLBENZENE              | 5.0             | ug/L | ND      |
| XYLENES                   | 5.0             | ug/L | ND      |

## **GC SEQUENCE NO: 38242** **GC SURROGATE RECOVERIES**

4-BROMOFLUOROBENZENE (65-133%) 123%

- E = ESTIMATED VALUE (ABOVE LINEAR RANGE)
- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
- B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE
- J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- S = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN
- SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION 8460/6-89, THIRD EDITION, NOVEMBER 1989

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STORY

REPORT: 11239.0471

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SMLO # 11239.04  
METHOD REFERENCE: OA-1  
DILUTION FACTOR: 1  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-03-92  
PROJECT: MARLEY PUMP COMPANY  
SAMPLE ID: MW-3D

| PARAMETER                                     | QUANT.<br>LIMIT | UNIT | RESULTS |
|-----------------------------------------------|-----------------|------|---------|
| <u>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</u> |                 |      |         |
| GASOLINE                                      | 10.0            | ug/L | ND      |

NOTE: THE ELUTION PATTERN OF THIS SAMPLE IS NOT CONSISTANT WITH GASOLINE

## QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 106%

- # = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.
- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
- B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE
- Q = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

**SOUTHWEST LABORATORY OF OKLAHOMA, INC.**

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: METCALF & EDDY  
1 PIERCE PLAZA, SUITE 1500 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STORY

REPORT: 11239.05BX

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SWLD #: 11239.05  
METHOD REFERENCE: SW846-8020  
DILUTION FACTOR: 1  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-06-92  
PROJECT: MARLEY PUMP COMPANY  
SAMPLE ID: RINSATE

| PARAMETER                 | QUANT.<br>LIMIT | UNIT | RESULTS |
|---------------------------|-----------------|------|---------|
| <u>GAS CHROMATOGRAPHY</u> |                 |      |         |
| BENZENE                   | 1.0             | ug/L | ND      |
| TOLUENE                   | 1.0             | ug/L | ND      |
| ETHYLBENZENE              | 1.0             | ug/L | ND      |
| XYLENES                   | 1.0             | ug/L | 0.3 J   |

GA SEQUENCE #01 38240  
GA/BC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-1352) 90%

- E = ESTIMATED VALUE (ABOVE LINEAR RANGE)  
ND = NOT DETECTED ABOVE QUANTITATION LIMIT  
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE  
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION  
# = SURROGATE RECOVERY OUTSIDE OF 90 LIMITS ON ORIGINAL RUN AND RERUN.  
SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

# SOUTHWEST LABORATORY OF OKLAHOMA, INC.

1700 W. Albany • Broken Arrow, Oklahoma 74012 • 918-251-2858 • FAX: 918-251-2599

CLIENT: RETCALF & EDDY  
1 PIERCE PLAZA, SUITE 1300 WEST  
ITASCA, ILL. 60143  
ATTN: DENISE STORY

REPORT: 11239.05TI

DATE: 10-21-92

SAMPLE MATRIX: WATER  
SWLD # 11239.05  
METHOD REFERENCE: OA-1  
DILUTION FACTOR: 1  
DATE SAMPLED: 10-01-92  
DATE SUBMITTED: 10-02-92  
DATE ANALYZED: 10-05-92  
PROJECT: MARLEY PUMP COMPANY  
SAMPLE ID: RINSATE

| PARAMETER                                     | QUANT.<br>LIMIT | UNIT | RESULTS |
|-----------------------------------------------|-----------------|------|---------|
| <u>TOTAL PURGEABLE PETROLEUM HYDROCARBONS</u> |                 |      |         |
| GASOLINE                                      | 10.0            | ug/L | ND      |

## QA/QC SURROGATE RECOVERY

4-BROMOFLUOROBENZENE 88%

- S = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.
- ND = NOT DETECTED ABOVE QUANTITATION LIMIT
- B = COMPOUND FOUND IN BLANK AS WELL AS SAMPLE
- J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- I = UNABLE TO QUANTITATE DUE TO MATRIX INTERFERENCE

**APPENDIX 13**

**XII(B) - OFF-SITE CONTAMINATION SOURCE SUPPORT DATA**

**Not applicable.**



### XIII - Site Risk Classification Justification - Question 7

MCLs as per Federal Register 56:3526, Final July 1992

Benzene - .005 mg/l  
Ethylbenzene - 0.7 mg/l  
Toluene - 1 mg/l  
Xylene - 10 mg/l

Action Level as per IAC 135

Benzene - 0.005 mg/l  
Ethylbenzene - 0.7 mg/l  
Toluene - 2.42 mg/l  
Xylene - 12.0 mg/l

Monitoring wells MW-1, MW-2, and MW-3 were completed 24.8 feet, 23.5 feet, and 21 feet, respectively, below grade. The laboratory analytical data for soils indicated that the IDNR action levels for TPH were not exceeded.

The monitoring wells were drilled with 4.25 I.D hollow stem augers. The monitoring wells were constructed with 2-inch diameter, 10-foot long, 0.010 inch slot Schedule 40 PVC well screens and Schedule 40 PVC risers. The annular space was filled with clean sand two feet above the screened interval. At least two feet of hydrated bentonite pellets were placed on top of the sand pack. The remaining annular space was completed with cement-bentonite grout. A five-foot long steel protective cover was installed around each monitoring well. The protective cover was cemented in place. A concrete collar was placed around the steel protective cover. The cement collar sloped away from the steel protective cover to prevent water from seeping into the annular space. Approximately 1-foot of bentonite pellets were placed inside and between the steel protective cover and the monitoring well. Monitoring well caps were placed on top of all three monitoring wells. Locks were provided for the steel protective covers. The monitoring wells were further protected with 4' x 4' wooden timber posts.

The radius of influence for these monitoring wells is minimal. The radius of influence would include the 2-inch diameter well and the soil immediately surrounding the annular space. A pump test was not conducted in these monitoring wells, therefore the actual radius of influence is unknown. These wells are to be used only as monitoring wells.

Hydraulic conductivity baildown tests were conducted in each of the three monitoring wells. Using the Bower-Rice equation for determining hydraulic conductivity (permeability), the following results were determined:

MW-1:  $K = 7.88 \times 10^{-4}$  cm/sec  $T_v = 3.08 \times 10^{-4}$  ft<sup>2</sup>/sec  
MW-2:  $K = 9.3 \times 10^{-4}$  cm/sec  $T_v = 2.39 \times 10^{-4}$  ft<sup>2</sup>/sec  
MW-3:  $K = 7.9 \times 10^{-4}$  cm/sec  $T_v = 2.43 \times 10^{-4}$  ft<sup>2</sup>/sec

$T_r$  - Transmissivity =  $Km$

$$K = R^2/2L[T_o - T_i] \times \ln(L/R) \times \ln[H(T_o)/H(T_i)]$$

$K$  - Hydraulic Conductivity  
 $m$  - Aquifer Thickness

The conductivity illustrated above are indicative of silts, glacial tills, and loesses (Freeze and Cherry, 1979).

Soil analytical results for all three monitoring wells are as follows:

MW-1: 7.5 - 10.0 ft., 0.0085J ppm TPH  
17.5 - 20.0 ft., 0.0068J ppm TPH  
MW-2: 5 - 7.5 ft., None detected ppm TPH  
MW-3: 7.5 - 10.0 ft., 0.0166 ppm TPH  
MW-3: 15.0 - 17.5 ft., None detected ppm TPH

The substance which is to be addressed is gasoline. Gasoline consists of a wide variety of hydrocarbons. Benzene, ethylbenzene, toluene and xylene (BETX) will be used as surrogate parameters for the wide variety of hydrocarbons found in gasoline. Although biodegradable, gasoline may persist in the environment while adsorbed on soil particles, floating on groundwater as a separate phase liquid, or dissolved in the groundwater. Gasoline constituents may migrate, however, the rate of migration is controlled by the geology of the impacted area.

Physicochemical characteristics of gasoline and BETX compounds are presented below:

| CHEMICAL             | FLASH POINT (°F) | FLAMMABLE LIMITS (%) | DENSITY (at 20°C) | SOLUBILITY (% at 20°C) | VAPOR PRESSURE (mm Hg) | HENRY'S LAW CONSTANT |
|----------------------|------------------|----------------------|-------------------|------------------------|------------------------|----------------------|
| gasoline             | -36              | 1.3 - 7.4            | 0.73              | NA                     | 383                    | NA                   |
| benzene              | 12               | 1.3 - 7.1            | 0.88              | 0.18                   | 75                     | 240                  |
| toluene              | 40               | 1.3 - 7.1            | 0.87              | 0.05                   | 22                     | 330                  |
| ethylbenzene         | 59               | 1.0 - 6.7            | 0.87              | 0.02                   | 7.1                    | 350                  |
| xylene (all isomers) | 81 - 90          | 1.0 to 7             | 0.86 to 0.88      | insoluble              | 9                      | not applicable       |

Due to the low permeability of the soils, the migration potential of these constituents is low.

SUMMARY OF EQUATIONS FOR DETERMINING HYDRAULIC CONDUCTIVITY, K:

$$K = \frac{R^2}{2L(T(2) - T(1))} \cdot \ln\left(\frac{L}{R}\right) \cdot \ln\left(\frac{R(T(1))/R(T(2))}{R(T(2))/R(T(1))}\right) \quad \text{EQUATION (1)}$$

WHERE:

- K = HYDRAULIC CONDUCTIVITY
- L = LENGTH OF WELL SCREEN
- R = RADIUS OF WELL
- T = TIME IN SECONDS FROM START OF TEST
- H = DIFFERENCE IN WATER HEAD BETWEEN WATER LEVEL AT TIME "T" AND THE STATIC WATER LEVEL

1) MONITORING WELL MW-1

$$K = \frac{(0.08)^2}{2 \cdot 12.18(12,600 - 3,600)} \cdot \ln\left(\frac{12.18}{0.08}\right) \cdot \ln\left(\frac{0.51}{0.06}\right) \quad \text{EQUATION (2)}$$

$$\begin{aligned} K &= 2.59 \times 10^{-7} \text{ ft/sec} \\ K &= 7.88 \times 10^{-5} \text{ cm/sec} \end{aligned} \quad \text{EQUATION (3)}$$

2) MONITORING WELL MW-2

$$K = \frac{(0.08)^2}{2 \cdot 7.18(9,000 - 3,600)} \cdot \ln\left(\frac{7.18}{0.08}\right) \cdot \ln\left(\frac{0.30}{0.14}\right) \quad \text{EQUATION (4)}$$

$$\begin{aligned} K &= 3 \times 10^{-7} \text{ ft/sec} \\ K &= 9.3 \times 10^{-6} \text{ cm/sec} \end{aligned} \quad \text{EQUATION (5)}$$

3) MONITORING WELL MW-3

$$K = \frac{(0.06)^2}{2 \cdot 11.6(9,000 - 4,800)} \cdot \ln\left(\frac{11.6}{0.06}\right) \cdot \ln\left(\frac{0.41}{0.29}\right) \quad \text{EQUATION (6)}$$

$$K = 2.6 \times 10^{-7} \text{ ft/sec}$$

$$K = 7.9 \times 10^{-6} \text{ cm/sec}$$

EQUATION (7)

**McCrall & Eddy  
Hydraulic Conductivity**

90257-01

Spring # MW-2  
Depth 25-28'

Description: CL Gray green silty sandy lean clay with trace organics

w 19%  
γ<sub>s</sub> 111.1 pcf  
G 2.68

Hydraulic Conductivity:  $1.5 \times 10^{-4}$  cm/sec  
@ hydraulic gradient = 6

Tested in accordance with ASTM D 3084-90.

The data gathered for this sample was collected from a Shelby tube. The soil was collected from MW-2, below the silt strata.

XIII - Site Risk Classification Justification, Question 11

Groundwater analytical results for monitoring well MW-1 indicate that BTEX constituents were below the laboratory detection limits.

Groundwater analytical results for MW-2 indicate the presence of BTEX constituents in the groundwater. Benzene, 0.748 ppm, exceeds both the MCL and the IAC action level. Toluene, 0.042 ppm, does not exceed the MCL or the IAC action level. Ethylbenzene, 0.322 ppm, does not exceed the MCL or the IAC action level. Xylene, 0.0836 ppm, does not exceed the MCL or the IAC action level.

Groundwater analytical results for MW-3 indicates the presence of BTEX constituents. Benzene and ethylbenzene were not detected in MW-3. Toluene, 0.0222 ppm, did not exceed the MCL or the IAC action level. Xylene, 0.0028J, was detected, however it was below the laboratory detection limits.

### XIII - Site Risk Classification Justification, Question 13

Two facility production wells and one facility test well are located within approximately 50 feet of the petroleum impacted area. One production well is currently out of service. This well is approximately 240 feet deep and is cased with steel through the upper aquifer. Another facility production well, currently in use, provides water to the facility for industrial processing and personal consumption. This well is approximately 240 feet deep and is cased with steel through the upper aquifer where the petroleum impacted area exists. The test well was used to test the facility's jet pumps and is currently not in use. This well is cased with steel through the upper strata. The test well was not used for facility production nor personal consumption. Water for personal consumption is not obtained from the upper aquifer.

The soil permeabilities are very low: MW-1 -  $7.88 \times 10^{-4}$  cm/sec, MW-2 -  $2.39 \times 10^{-4}$  cm/sec, and  $2.43 \times 10^{-4}$  cm/sec. And, benzene, the only component greater than the MCL, is a floater and will not penetrate vertically through approximately 200 feet of  $\pm 10^{-4}$  cm/sec clay, silts, glacial tills.

The potential for the facility's production wells to be impacted is low because all the deep wells are steel cased through the upper impacted strata.



XIII - Site Risk Classification Justification, Question 14

The material consist of silts, loesses, and/or glacial tills whose hydraulic conductivity is not greater than  $\pm 10^{-4}$  cm/sec or  $10^{-4}$  m/day. Furthermore, the TPH levels in the subsurface soils did not exceed the IDNR action level of 100 mg/kg.

The material is uniform where the investigation was performed. The material consists mainly of silts with no intermittent sand or clay layers.

Hydraulic conductivity tests were performed in all three monitoring wells.

Please see responses to Appendix 14, Question 7, Site Risk Classification Justification; Appendix 12, Laboratory Data Sheets; and Appendix 5, III(E) - DNR Form 542-1392, Soil Boring Logs for further details and information.

**XIII - Site Risk Classification Justification, Low Risk Site Conditions**  
**Question 1**

Soil TPH did not exceed the 100 mg/kg action level. However, benzene, the only BTEX constituent exceeded the IDNR action level.

**APPENDIX 15**

**XIV(A3) - TREATMENT TECHNOLOGY EVALUATION  
HIGH RISK SITES ONLY**

## APPENDIX 15

### XIV(A4) - TREATMENT TECHNOLOGY EVALUATION

To proceed with determining a treatment technology without determining the extent of contamination is premature. The area of impact is unknown, therefore a determination of an approximate volume of contaminated groundwater can not be calculated. When the Marley Pump Company determines the extent of contamination at this facility, then those items listed in Section XIV, Corrective Action Response, will be addressed.

**APPENDIX 16**

**XIV(A4) - BEST AVAILABLE TECHNOLOGY EVALUATION**

**Not applicable.**

**APPENDIX 17**

**XIV(B2) - BEST MANAGEMENT PRACTICE  
LOW RISK SITES ONLY**

Please see response to Appendix 15, XIV (A3).

**APPENDIX 18**

**XIV(B3) - MONITORING PLAN (LOW RISK SITES ONLY)**

Please see response to XIV (A3).

8/25/84

MARLEY

**FEDERAL EXPRESS**

BOB BEST  
Corporate Director  
Environmental Affairs

May 21, 1992

Ms. Becky Schwiete  
Environmental Specialist  
Underground Storage Tank Section  
Iowa Department of Natural Resources  
Wallace State Office Building  
Des Moines, Iowa 50319

Re: Tank Registration No. 7910056 - LUST No. 8LTS64

Dear Ms Schwiete:

I am in receipt of your April 23, 1992 letter concerning the referenced facility.

As requested in your letter we are hereby submitting written notification of the registered groundwater professional we anticipate using for this project. This individual is Elizabeth Underwood with Metcalf & Eddy, Inc., 10207 W. 67th Street, Kansas City, Mo. 64152.

It is our intent to submit a completed SCR within the 180 day time frame indicated.

If you have any questions please give me a call.

Sincerely,

THE MARLEY COMPANY

*Bob Best*  
Bob Best  
Corporate Director  
Environmental Affairs

BB:mr

ind 92 078



DEPARTMENT  
OF  
NATURAL RESOURCES  
92 MAY 22 AM 10:13



TERRY E. BRANSTAD, GOVERNOR

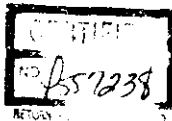
STATE OF  
**IOWA**

CORD COPY

DEPARTMENT OF NATURAL RESOURCES  
LARRY J. WILSON, DIRECTOR

CERTIFIED MAIL

April 23, 1992



Bob Best  
Marley Company  
1900 Shawnee Mission Parkway  
Mission Woods, KS 66205

SUBJECT: Petroleum Contamination - 500 East 59th St., Davenport  
Tank Registration No. 7910056 - LUST No. SUTS84

Dear Mr. Best:

This department was informed on April 7, 1992 of contamination at the referenced facility. As a result of this contamination, this department under Subrule 135.6 of Chapter 135 of the Iowa Administrative Code (IAC) is requiring that you take the following actions:

- 1) Within 30 calendar days after receipt of this letter, provide written notification to the Underground Storage Tank Section of this department identifying the registered groundwater professional you have retained for this project and your intent to follow the schedule contained in this letter.
- 2) If you have an active tank system and intend to maintain the system, perform a system tightness test to determine whether a leak exists in that portion of the tank system that routinely contains product, including the attached delivery piping. Provide the department a complete copy of system tightness test and actions taken to repair the system in the Site Cleanup Report (SCR) as Appendix II(C). If system failure is indicated, the system must be immediately emptied. The system may be placed back into operation only after repair or replacement and successfully passing a subsequent system tightness test.
- 3) Within 180 calendar days after receipt of this letter, submit the SCR. The enclosed SCR guidance must be followed. Incomplete SCRs and SCRs not submitted in the format required by this document will be rejected.

Please be aware that Subrule 134.3(3) of the IAC requires a person who provides subsurface soil contamination and groundwater consulting services or who contracts to perform or supervise remediation or

corrective action services at leaking underground storage tank sites be a registered groundwater professional. Insure that the consultant and/or contractor you select is registered as a groundwater professional with the department.

The department will approve the SCR upon determination that implementation of the corrective action response will adequately protect human health, safety and the environment. Upon approval of the SCR, you will be required to implement the corrective action recommendations. You must monitor, evaluate and report the results of corrective action activities in accordance with the schedule and on a form or in a format required by the department.

If you find you are unable to meet the above schedule, notify the department, in writing, as quickly as possible. In all correspondence regarding this project, please include the LUST number, which is indicated in the Subject heading of this letter.

If you have further questions or if we may be of assistance, please contact Becky Schwiete at 515/242-6488 or Verne Schrunck at 515/281-6704.

Sincerely,

*Becky Schwiete*

BECKY SCHWIEITE  
ENVIRONMENTAL SPECIALIST  
UNDERGROUND STORAGE TANK SECTION

BS/s84scr

Attachments

cc: Field Office 6  
GAB Business Services

Bob Beut  
Marley Company  
1900 Shermes Mission Parkway  
Mission Woods, KS 66205

RECEIVED

April 9, 1992

BOB BEST  
Corporate Director  
Environmental Affairs

Mr. Verne Schrunk  
Iowa Department of Natural Resources  
Underground Storage Tank Division  
Wallace State Office Building, 5th Floor  
900 East Grand Avenue  
Des Moines, Iowa 50319

Re: Marley Pump Company  
500 East 59th Street  
Davenport, Iowa 52807

Dear Mr. Schrunk:

I am enclosing an original copy of the report from Seneca Environmental Services, rather than the fax copy previously sent to you, dated April 3, 1992, regarding the referenced facility.

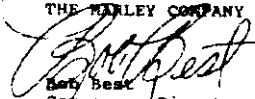
As I indicated to you over the phone, Seneca collected a soil and water sample at the site as required by the Iowa Underground Storage Tank Program Application. The analytical results indicate the presence of benzene at 610 ppb.

Please accept this letter as written confirmation of our phone conversation and fulfillment of our reporting obligations. Please advise us if any additional reporting is required.

I await your comments regarding the appropriate course of action.

Sincerely,

THE MARLEY COMPANY



Bob Best  
Corporate Director  
Environmental Affairs

BB:mr

cc: R.F. Wrobel, The Marley Company  
L.D. Donahue, The Marley Company  
N.D. LaGrange, Red Jacket Pumps

and 2-015

DEPARTMENT  
OF  
NATURAL RESOURCES

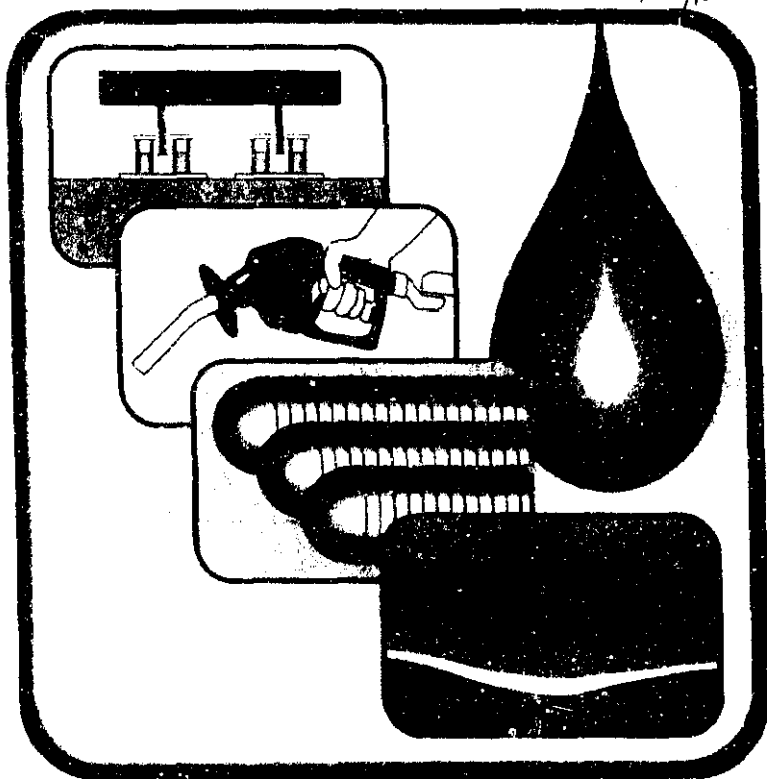
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8LTS84

# SENECA

ENVIRONMENTAL SERVICES, INC.

Roll 41302



Des Moines • Davenport • Omaha

**SENECA**  
ENVIRONMENTAL SERVICES

Seneca Environmental Services, Incorporated  
5113 Truitt Avenue - Davenport, Iowa 52807 • (319) 386-2522

April 6, 1992

Mr. Ed Dunning  
Marley Pump Company  
500 East 59th Street  
Davenport, Iowa 52807

SUBJECT: SITE INVESTIGATION FOR PLACEMENT OF  
UNDERGROUND STORAGE TANKS FOR  
MARLEY PUMP COMPANY  
500 EAST 59TH STREET, DAVENPORT, IOWA

Dear Mr. Dunning:

We are submitting this letter summarizing our observations of the site investigation and soil testing at the above-referenced location.

On March 18, 1992, Seneca Environmental Services performed a site investigation at Marley Pump Company in the vicinity of the proposed underground storage tank location. The investigation involved the advancement of one borehole to a depth of 25-feet and obtaining a water sample from the borehole. A representative of Seneca Environmental Services was on-site to observe the activities, classify the soils, and to obtain the soil and water samples. The location of the borehole is indicated on the attached site plan map.

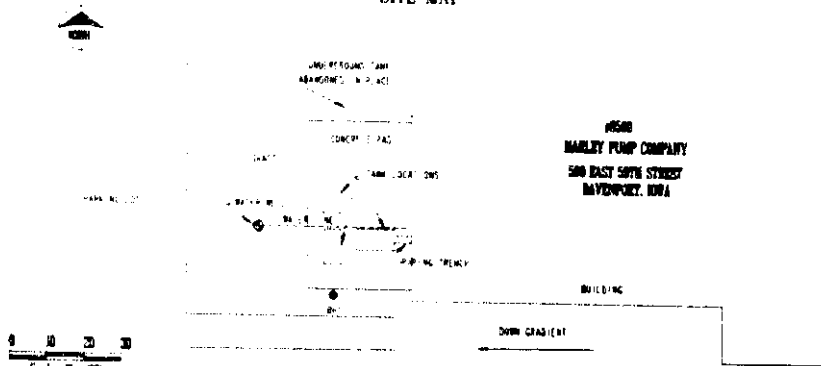
Continued on Page #2

DEPARTMENT  
OF  
NATURAL RESOURCES

92 APR 13 PM 12:14



# SITE MAP



10000  
MARLEY PUMP COMPANY  
500 EAST 50TH STREET  
DAVENPORT, IOWA

SENECA Environmental Services

Marley Pump Company  
Davenport, Iowa

REV 4/2/98

PAGE NO.

1

Mr. Ed Dunning  
Marley Pump Company  
March 26, 1992

A soil sample was obtained from the seven-foot depth of the borehole for laboratory analysis. A water sample was obtained from the 20-foot depth of the borehole for analysis. The samples were packaged, labeled and placed in iced storage for delivery to NET Midwest Laboratories, Inc., located in Cedar Rapids, Iowa, for analysis of benzene, toluene, ethyl benzene, and total xylenes (BTEX), for total petroleum hydrocarbons (TPH) as gasoline, and for total extractable hydrocarbons (TEH) as found in diesel fuel. A chain-of-custody form accompanied the samples from the sampling site to the laboratory. The results of the laboratory analyses are listed in the Appendix of this letter.

Based upon the preliminary field work and the laboratory results for the soil and water samples, it appears that the soil and groundwater in the vicinity of the proposed tank excavation is not contaminated with hydrocarbons from gasoline or diesel. The analytical laboratory results for the soil sample are below the current Iowa Department of Natural Resources (IDNR) action guidelines of 100 mg/kg (ppm) for TPH and TEH. The laboratory analytical results for the water sample were found to be 410 µg/l (ppb), which is above the IDNR action guideline of 5.0 µg/L (ppb).

Mr. Ed Dunning  
Marley Pump Company  
March 26, 1992

According to the soil boring log, the soils in the vicinity appear to be tight, firm silty clays with low permeability. The hydraulic conductivity of such soils ranges between  $10^{-3}$  cm/sec and  $10^{-6}$  cm/sec (Freeze, et al), with an average grain size of 0.004 mm (Pettijohn, et al). Although the groundwater in the vicinity of the tank pit appears to be impacted at the 20-foot depth, the soils at the seven-foot depth do not appear to have been affected by any hydrocarbon impact. The seven-foot depth is slightly below the level of the bottom of the tank pit.

A large metal pipe runs through the tank pit excavation from a water well located approximately 20-feet west of the site in the down-gradient direction. The pipe is approximately two-feet below the surface of the ground and is set directly in the clay soils, with no sand backfill around it. The pipe is situated at a level above the midline of the proposed tanks and the tanks are of double-walled construction. It is not likely that this pipe will act as a conduit for any hydrocarbon migration if a leak occurs in one of the underground storage tanks. The monitoring system which will be installed will indicate any fuel loss from the tanks or lines and the leak would be mitigated before product could migrate along the pipe line.

Continued on Page #5

Mr. Ed Dunning  
Marley Pump Company  
March 26, 1992

Seneca Environmental Services appreciates the opportunity of addressing your underground storage tank needs. If you have any questions concerning this letter or if we can be of further assistance, please give us a call.

Sincerely,  
Seneca Environmental Services

*Heather Morton-Davis*  
Heather Morton-Davis  
Registered Groundwater Professional, #1252

#### REFERENCES

- Freeze, Allan R. and Cherry, John A., 1979, Groundwater, Prentice-Hall, Englewood Cliffs, New Jersey, 604 pp.
- Pettijohn, F.J., 1975, Sedimentary Rocks, Harper & Row, New York, New York, 628 pp.

# SENECA Environmental Services Inc.

Project Machinery Pump Hole/Well No. BH1  
 Location Davenport, Iowa Borehole diameter 7.5  
 Job No. 1460 Total Depth of Hole 25.0 feet  
 Geologist/Engineer \_\_\_\_\_ Depth to Water 29.0  
 Drill Crew White/Streibling Date Completed 3/18/92

| DEPTH<br>IN FEET | WELL CONSTRUCTION DETAIL | PID-VAL | SAMPLE | LITHOLOGY | DESCRIPTION                                                                     |
|------------------|--------------------------|---------|--------|-----------|---------------------------------------------------------------------------------|
| 0                |                          |         |        | OL        | Grass - Topsoil                                                                 |
| 2                |                          |         |        | CL        | Silty Clay, brown, no odor                                                      |
| 4                |                          |         |        |           |                                                                                 |
| 6                |                          |         |        |           | Silty Clay, slight odor, dark gray                                              |
| 8                |                          |         |        | ML        | Clayey Silt, light gray, no odor                                                |
| 10               |                          |         |        |           |                                                                                 |
| 12               |                          |         |        |           | Clayey Silt, light brown with fine grains of sand, no odor, damp                |
| 14               |                          |         |        |           |                                                                                 |
| 16               |                          |         |        |           |                                                                                 |
| 18               |                          |         |        | CL        | Silty Clay, dark gray, embedded with fine to medium grained sand, no odor, damp |
| 20               |                          |         |        | CL        | Clay, gray-green, wet, no odor                                                  |
| 22               |                          |         |        |           |                                                                                 |
| 24               |                          |         |        |           |                                                                                 |
| 26               |                          |         |        |           |                                                                                 |
| 28               |                          |         |        |           |                                                                                 |
| 30               |                          |         |        |           |                                                                                 |

Total Depth = 25.0 Feet  
 Soil Sample = S-6-BH1, S-7-BH1  
 S-14-BH1  
 Water Sample = W-BH1



NATIONAL  
ENVIRONMENTAL  
TESTING, INC.

NET Midwest, Inc.  
Cedar Falls Division  
704 Enterprise Drive  
P.O. Box 825  
Cedar Falls, IA 50613  
Tel: (319) 277-2401  
Fax: (319) 277-2425

## ANALYTICAL REPORT

Ms. Heather Morton-Davis  
SENECA ENVIRONMENTAL SERV.  
5113 Tremont Avenue  
Davenport, IA 52807

03/30/1992

Sample No.: 163005  
Job Number: 92.2095

Sample Description: S-7 BH-1 Marley Pump  
SOIL

Date Taken: 03/18/1992

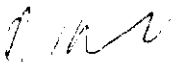
Date Received: 03/19/1992

| Parameter                      | Result | Units | Date Analyzed/Analyst |
|--------------------------------|--------|-------|-----------------------|
| Total Extractable Hydrocarbons | <10.   | ug/g  | 03/27/1992 hlk        |
| VOLATILES - BTEX (NONAQUEOUS)  |        |       |                       |
| Benzene                        | <0.5   | ug/g  | 03/24/1992 mkk        |
| Ethylbenzene                   | <0.5   | ug/g  | 03/24/1992 mkk        |
| Toluene                        | <0.5   | ug/g  | 03/24/1992 mkk        |
| Xylenes, Total                 | <0.5   | ug/g  | 03/24/1992 mkk        |
| Total Hydrocarbons             | <10.   | ug/g  | 03/24/1992 mkk        |

Sample introduction performed in reference to EPA Method 5030 (purge & trap). Analysis performed in reference to EPA Method 8015 for volatile organics using flame ionization detection. (Iowa Method 0A-1, Revision 7/01/91).

Method Detection Limits: Benzene <0.5 ug/g; Toluene <0.5 ug/g;  
Xylenes, Total <0.5 ug/g; Total Hydrocarbons <10. ug/g;  
Ethyl Benzene <0.5 ug/g

Extractable Hydrocarbons are extracted in accordance with EPA Method 3550 (sonication extraction). Analysis is performed in reference to EPA Method 8100 using flame ionization detection. (Iowa Method 0A-2, Revision 7/01/91). Method Detection Limit <10. ug/g

  
R. L. Bindert  
Project Manager

received  
11/14/92



NATIONAL  
ENVIRONMENTAL  
TESTING, INC.

NET Midwest, Inc.  
Cedar Falls Division  
704 Enterprise Drive  
P.O. Box 525  
Cedar Falls, IA 50613  
Tel: (319) 277-2401  
Fax: (319) 277-2425

ANALYTICAL REPORT

Ms. Heather Morton-Davis  
SENECA ENVIRONMENTAL SERV.  
5113 Tremont Avenue  
Davenport, IA 52807

03/30/1992

Sample No.: 163006  
Job Number: 92.2095

Sample Description: W-BH1  
WATER

Marley Pump

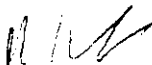
Date Taken: 03/18/1992

Date Received: 03/19/1992

|                          | <u>Result</u> | <u>Units</u> | <u>Date Analyzed/Analyst</u> |
|--------------------------|---------------|--------------|------------------------------|
| VOLATILES - BTEX (WATER) |               |              |                              |
| Benzene                  | 0.61          | mg/L         | 03/20/1992 ake               |
| Ethylbenzene             | 0.25          | mg/L         | 03/20/1992 ake               |
| Toluene                  | 0.29          | mg/L         | 03/20/1992 ake               |
| Xylenes, Total           | 0.25          | mg/L         | 03/20/1992 ake               |
| Total Hydrocarbons       | 3.7           | mg/L         | 03/20/1992 ake               |

Sample introduction performed in reference to EPA Method 5030 (purge and trap). Analysis performed in reference to EPA Method 8015 for volatile organics using flame ionization detection. (Iowa Method OA-1, Revision 7/01/91).

Method Detection Limits: Benzene <0.002 mg/L; Toluene <0.002 mg/L;  
Xylenes, Total <0.002 mg/L; Ethyl Benzene <0.002 mg/L  
Total Hydrocarbons <0.10 mg/L.

  
R. L. Bindert  
Project Manager

**NATIONAL  
ENVIRONMENTAL  
TESTING, INC.**

**NET Midwest, Inc.**  
Cedar Falls Division  
704 Enterprise Drive  
P.O. Box 625  
Cedar Falls, IA 50613  
Tel (319) 277-2401  
Fax (319) 277-2425

### CHAIN OF CUSTODY

|                                             |                                  |
|---------------------------------------------|----------------------------------|
| Client <u>Seneca Environmental Services</u> | Project Name. <u>Marley Pump</u> |
| Send Report to: <u>Heather Davis</u>        | <u>500 E 59th St</u>             |
| Address <u>5113 Tremont Ave.</u>            | <u>Davenport, IA 52807</u>       |
| <u>Davenport, IA 52807</u>                  | Collected by: <u>MAT White</u>   |
| Telephone # <u>319-386-2552</u>             |                                  |

[illegible]

Remarks:

| Relinquished by:            | Date Time              | Received by:                 | Date Time           |
|-----------------------------|------------------------|------------------------------|---------------------|
| <i>Matt White</i>           | <i>3/15/92</i>         |                              |                     |
| Shipping Notes/Lab Comments |                        | Received for NET Midwest by: |                     |
|                             |                        | <i>Spina John</i>            | <i>3/16/92 8:00</i> |
| Samples Field Filtered:     | ___ Yes ___ No         |                              |                     |
| Seals Intact Upon Receipt:  | ___ Yes ___ No ___ N/A |                              |                     |



4-10-92  
JH

MARLEY

April 8, 1992

BOB BEET  
Corporate Director  
Environmental Affairs

Mr. Verne Schrunk  
Iowa Department of Natural Resources  
Underground Storage Tank Division  
Wallace State Office Building, 5th Floor  
900 East Grand Avenue  
Des Moines, Iowa 50319

Re: Marley Pump Company  
500 East 59th Street  
Davenport, Iowa 52807

Dear Mr. Schrunk:

Per our phone conversation of yesterday, I am enclosing a copy of the report from Seneca Environmental Services, dated April 3, 1992, regarding the referenced facility.

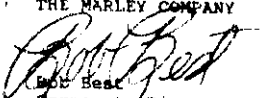
As I indicated to you over the phone, Seneca collected a soil and water sample at the site as required by the Iowa Underground Storage Tank Program Application. The analytical results indicate the presence of benzene at 610 ppb.

Please accept this letter as written confirmation of our phone conversation and fulfillment of our reporting obligations. Please advise us if any additional reporting is required.

I await your comments regarding the appropriate course of action.

Sincerely,

THE MARLEY COMPANY

  
Bob Beet  
Corporate Director  
Environmental Affairs

BB:mr

cc: R.F. Wrobel, The Marley Company  
L.D. Donahue, The Marley Company  
N.D. LaGrange, Red Jacket Pumps

indv2085

**SENECA**  
ENVIRONMENTAL SERVICES

Seneca Environmental Services, Incorporated  
8113 Tremont Avenue - Davenport, Iowa 52807 - (319) 399-3638

April 3, 1992

Mr. Ed Dunning  
Marley Pump Company  
500 East 59th Street  
Davenport, Iowa 52807

SUBJECT: SITE INVESTIGATION FOR PLACEMENT OF  
UNDERGROUND STORAGE TANKS FOR  
MARLEY PUMP COMPANY  
500 EAST 59TH STREET, DAVENPORT, IOWA

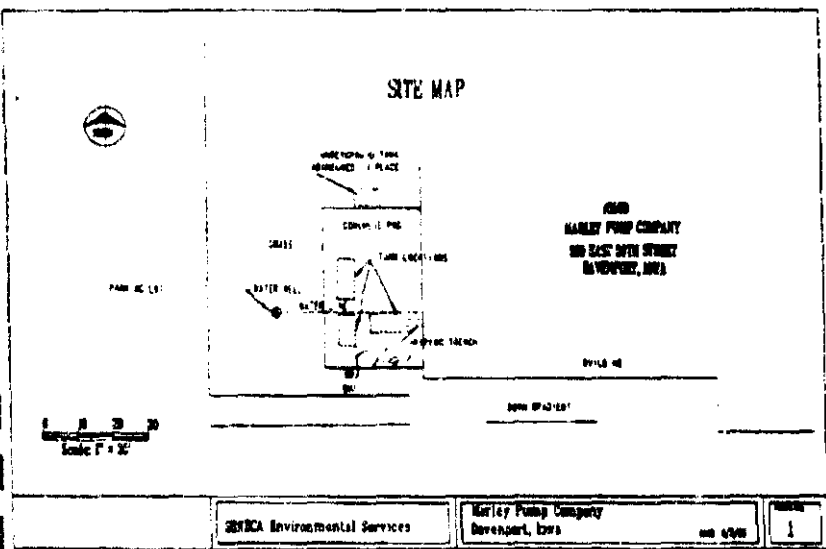
Dear Mr. Dunning:

We are submitting this letter summarizing our observations of the site investigation and soil testing at the above-referenced location.

On March 18, 1992, Seneca Environmental Services performed a site investigation at Marley Pump Company in the vicinity of the proposed underground storage tank location. The investigation involved the advancement of one borehole to a depth of 25-feet and obtaining a water sample from the borehole. A representative of Seneca Environmental Services was on-site to observe the activities, classify the soils, and to obtain the soil and water samples. The location of the borehole is indicated on the attached site plan map.

Continued on Page #2

RECEIVED  
NATIONAL BUREAU OF INVESTIGATION  
APR 13 9 11 AM '52



Mr. Ed Dunning  
Harley Pump Company  
March 26, 1992

A soil sample was obtained from the seven-foot depth of the borehole for laboratory analysis. A water sample was obtained from the 20-foot depth of the borehole for analysis. The samples were packaged, labeled and placed in iced storage for delivery to NHT Midwest Laboratories, Inc., located in Cedar Falls, Iowa, for analysis of benzene, toluene, ethyl benzene, and total xylenes (BTEX), for total petroleum hydrocarbons (TPH) as gasoline, and for total extractable hydrocarbons (TEH) as found in diesel fuel. A chain-of-custody form accompanied the samples from the sampling site to the laboratory. The results of the laboratory analyses are listed in the Appendix of this letter.

Based upon the preliminary field work and the laboratory results for the soil and water samples, it appears that the soil in the vicinity of the proposed tank excavation is not contaminated with hydrocarbons from gasoline or diesel. The analytical laboratory results for the soil sample are below the current Iowa Department of Natural Resources (IDNR) action guidelines of 100 mg/kg (ppm) for TPH and TEH. The laboratory analytical results for the water sample were found to be 610 µg/L (ppb), which is above the IDNR action guideline of 5.0 µg/L (ppb).

Continued on Page #4

Mr. Ed Dunning  
Marley Pump Company  
March 26, 1992

According to the soil boring log, the soils in the vicinity appear to be tight, firm silty clays with low permeability. The hydraulic conductivity of such soils ranges between  $10^{-3}$  cm/sec and  $10^{-4}$  cm/sec (Fresse, et al), with an average grain size of 0.004 mm (Pettijohn, et al). Although the groundwater in the vicinity of the tank pit appears to be impacted at the 20-foot depth, the soils at the seven-foot depth do not appear to have been affected by any hydrocarbon impact. The seven-foot depth is slightly below the level of the bottom of the tank pit.

A large metal pipe runs through the tank pit excavation from a water well located approximately 20-feet west of the site in the down-gradient direction. The pipe is approximately two-feet below the surface of the ground and is set directly in the clay soils, with no sand backfill around it. The pipe is situated at a level above the midline of the proposed tanks and the tanks are of double-walled construction. It is not likely that this pipe will act as a conduit for any hydrocarbon migration if a leak occurs in one of the underground storage tanks. The monitoring system which will be installed will indicate any fuel loss from the tanks or lines and the leak would be mitigated before product could migrate along the pipe line.

Mr. Ed Durning  
Marley Pump Company  
March 28, 1992

Due to the fact that Seneca Environmental Services has identified the presence of certain hazardous substances or contaminants, you should be aware that you have, or may have, the duty to report said findings to federal, state, or local authorities in a timely manner. Unless otherwise informed, Seneca Environmental Services assumes that said reporting has been properly completed by you.

You should send a copy of this letter to the IDNR for their project file regarding underground storage tank activities at your facility. Please send it to:

Mr. Verne Schunk  
Iowa Department of Natural Resources  
Underground Storage Tank Division  
Wallace State Office Building, 5th Floor  
900 East Grand Avenue  
Des Moines, Iowa 50319.

One copy of this letter should be sent to GAS for reimbursement purposes. Please send it to:

Mr. Neil Searcy  
GAS  
P.O. Box 3837  
Des Moines, Iowa 50321.

Continued on Page #6

Mr. Ed Dunning  
Harley Pump Company  
March 26, 1992

Seneca Environmental Services appreciates the opportunity of addressing your underground storage tank needs. If you have any questions concerning this letter or if we can be of further assistance, please give us a call.

Sincerely,  
Seneca Environmental Services

*Heather Morton-Davis*

Heather Morton-Davis  
Registered Groundwater Professional, #1252

#### REFERENCES

- Freeze, Allan R. and Cherry, John A., 1979, Groundwater, Prentice-Hall, Englewood Cliffs, New Jersey, 604 pp.
- Fettigohn, F.J., 1978, Sedimentary Rocks, Harper & Row, New York, New York, 628 pp.



APPENDIX A

SOIL BORING RECORD

# SENECA Environmental Services Inc.

Project MACLEAY PARK Hole/Well No. 1011  
 Location BRANDENBURG, Iowa Borehole diameter 7.5  
 Job No. 9460 Total depth of hole 25.0 feet  
 Geologist/Engineer \_\_\_\_\_ Depth to Water 22.0  
 Drilling Crew WHITE/STRIHLING Date Completed 3/18/82

| DEPTH<br>in FEET | WELL CONSTRUCTION DETAIL | PTB-1A | LOG | LITHOLOGY | DESCRIPTION                                                                     |
|------------------|--------------------------|--------|-----|-----------|---------------------------------------------------------------------------------|
| 0                |                          |        |     | DL        | Gravel - Topsoil                                                                |
| 2                |                          |        |     | CL        | Silty Clay, brown, no odor                                                      |
| 4                |                          |        |     |           |                                                                                 |
| 6                |                          |        |     |           | Silty Clay, slight odor, dark gray                                              |
| 8                |                          |        |     | ML        | Clayey Silt, light gray, no odor                                                |
| 10               |                          |        |     |           |                                                                                 |
| 12               |                          |        |     |           | Clayey Silt, light brown with fine grains of sand, no odor, damp                |
| 14               |                          |        |     |           |                                                                                 |
| 16               |                          |        |     |           |                                                                                 |
| 18               |                          |        |     | CL        | Silty Clay, dark gray, embedded with fine to medium grained sand, no odor, damp |
| 20               | ▽                        |        |     | CL        | Clay, gray-green, wet, no odor                                                  |
| 22               |                          |        |     |           |                                                                                 |
| 24               |                          |        |     |           |                                                                                 |
| 26               |                          |        |     |           |                                                                                 |
| 28               |                          |        |     |           |                                                                                 |
| 30               |                          |        |     |           |                                                                                 |

Total Depth = 25.0 Feet  
 Soil Sample - S-6-BH1, S-7-BH1  
 S-14-BH1  
 Water Sample - W-BH1

## APPENDIX B

LABORATORY ANALYTICAL REPORTS

FOR

SOIL SAMPLES



NATIONAL  
ENVIRONMENTAL  
TESTING, INC.

NET Midwest, Inc.  
Cedar Falls Division  
704 Evergreen Drive  
P.O. Box 625  
Cedar Falls, IA 50613  
Tel: (319) 277-2401  
Fax: (319) 277-2428

# ANALYTICAL REPORT

Ms. Heather Morten-Davis  
SEMCA ENVIRONMENTAL SERV.  
8113 Tremont Avenue  
Davenport, IA 52807

03/30/1992

Sample No.: 163005  
Job Number: 92.2095

Sample Description: S-7 MI-1 Marley Pump  
SOIL

Date Taken: 03/18/1992

Date Received: 03/19/1992

| Parameter                      | Result | Units | Date Analyzed/Analyst |
|--------------------------------|--------|-------|-----------------------|
| Total Extractable Hydrocarbons | <10.   | ug/g  | 03/27/1992 hlk        |
| VOLATILES - BTEX (NONAQUEOUS)  |        |       |                       |
| Benzene                        | <0.5   | ug/g  | 03/24/1992 mkk        |
| Ethylbenzene                   | <0.5   | ug/g  | 02/24/1992 mkk        |
| Toluene                        | <0.5   | ug/g  | 03/24/1992 mkk        |
| Xylenes, Total                 | <0.5   | ug/g  | 03/24/1992 mkk        |
| Total Hydrocarbons             | <10.   | ug/g  | 03/24/1992 mkk        |

Sample introduction performed in reference to EPA Method 8030 (purge & trap). Analysis performed in reference to EPA Method 8015 for volatile organics using flame ionization detection. (Iowa Method OA-1, Revision 7/01/91).

Method Detection Limits: Benzene <0.5 ug/g; Toluene <0.5 ug/g; Xylenes, Total <0.5 ug/g; Total Hydrocarbons <10. ug/g; Ethyl Benzene <0.5 ug/g.

Extractable Hydrocarbons are extracted in accordance with EPA Method 1550 (sonication extraction). Analysis is performed in reference to EPA Method 8100 using flame ionization detection. (Iowa Method OA-2, Revision 7/01/91). Method Detection Limit <10. ug/g

*[Signature]*  
R. L. Sindert  
Project Manager

received  
April



NATIONAL  
ENVIRONMENTAL  
TESTING, INC.

KET Midwest, Inc.  
Cedar Falls Division  
701 Enterprise Drive  
P.O. Box 825  
Cedar Falls, IA 50613  
Tel: (319) 277-8401  
Fax: (319) 277-3425

## ANALYTICAL REPORT

Ms. Heather Norton-Davis  
SENECA ENVIRONMENTAL SERV.  
5113 Tremont Avenue  
Davenport, IA 52807

03/30/1992

Sample No.: 163406  
Job Number: 92.2095

Sample Description: N-LM1 Marley Pump  
WATER


Date Taken: 03/18/1992

Date Received: 03/19/1992

|                          | <u>Result</u> | <u>Units</u> | <u>Date Analyzed/Analyst</u> |
|--------------------------|---------------|--------------|------------------------------|
| VOLATILES - BTEX (WATER) |               |              |                              |
| Benzene                  | 0.61          | mg/L         | 03/20/1992 aka               |
| Ethylbenzene             | 0.25          | mg/L         | 03/20/1992 aka               |
| Toluene                  | 0.29          | mg/L         | 03/20/1992 aka               |
| Xylenes, Total           | 0.25          | mg/L         | 03/20/1992 aka               |
| Total Hydrocarbons       | 3.7           | mg/L         | 03/20/1992 aka               |

Sample introduction performed in reference to EPA Method 5030 (purge and trap). Analysis performed in reference to EPA Method 8015 for volatile organics using flame ionisation detection. (Iowa Method 9A-1, Revision 7/01/91).

Method Detection Limits: Benzene <0.003 mg/L; Toluene <0.003 mg/L;  
Xylenes, Total <0.003 mg/L; Ethyl Benzene <0.002 mg/L  
Total Hydrocarbons <0.10 mg/L.

  
R. L. Hindert  
Project Manager



## PRELIMINARY LUST REPORT

**LUST # 943584**

## LUSTR SITE DESCRIPTION

**LEAD**  responsible party/5 - (max.)

## DNR STAFF

## MANUTENZIONE

REGISTRATION #

SPILL #

FIELD OFFICE # 6

FIELD OFFICE CONTACT NAME

COUNTY NUMBER 81

## TANK INFORMATION

FACILITY NAME Lighter Pump Company (the Jacked

STREET ADDRESS/LEGAL

(NW 1/4 SEC. 36 T-9S R-10E/W)

54 55 56 57

CITY                     

ZIP 52607

**PAGE**

### OWNER INFORMATION

NAME Harley Campbell

STREET ADDRESS 1900 Shogunee Mission Highway

CITY *Aspen Woods*

ST AS

ZIP 66205

PHONE 703-362-5740

**TYPE** (C) = city CO = county FD = Federal ST = state SC = school PS = private

## CONTACT INFORMATION

NAME Ash Ash

PHONE 973-362-5440

**SHADED AREAS MUST BE COMPLETED AT THE TIME THE PLR IS INITIATED**  
**ITALICIZED/DOUBLE UNDERLINED - MANDATORY EPA REPORTABLE ITEMS**

# MEMORANDUM

See also Vol 3 (95-100)



LUST NUMBER

Page 2

## LUST SITE BEGINNING

FACILITY NAME

TANK CITY

START DATE

(Date the LUST # was entered on the computer)

4/17/92

RECORDED BY

NAME UK

LOCATION

(Pollut./UST/OT + other)

DATE 4/17/92

TIME 2:40

AM/PM

(circle one)

REPORTED BY

NAME Bob Best

PHONE

COMPANY NAME

STREET ADDRESS

CITY

ST

ZIP

DATE 4/17/92

TIME 2:40

AM/PM

(circle one)

NOTIFIED WITHIN 6 HOURS

YES (NO)

(circle one)

DISCOVERY DATE 4/13/92

TIME

AM/PM

(circle one)

4:45

OCCURRENCE DATE 1/1/92

TIME

AM/PM

(circle one)

4:45

SHADED AREAS MUST BE COMPLETED AT THE TIME THE PLR IS INITIATED  
ITALICIZED/DOUBLE UNDERLINED - MANDATORY EPA REPORTABLE ITEM

## MEMORANDUM

Recd Report Re inventory done for ICRF for new tank  
Installation



|                         |             |                  |                                     |
|-------------------------|-------------|------------------|-------------------------------------|
| LUST NUMBER             |             | LUST SITE STATUS |                                     |
| FACILITY NAME           |             | TANK CITY        |                                     |
| LEAK DISCOVERED THROUGH |             |                  |                                     |
| TANK REMOVAL            | (YES OR NO) | MONITOR          | (YES OR NO) <u>OTHER</u> (USE MEMO) |
| NUMBER TANKS REMOVED    | (1 - 99)    | CAUSE OF LEAK    | (Describe) <u>under</u>             |

**"X" THE [ ] TO INDICATE THE APPROPRIATE RESPONSE**

**PRODUCT**

|                                                 |                                          |                                             |                                                        |                                   |
|-------------------------------------------------|------------------------------------------|---------------------------------------------|--------------------------------------------------------|-----------------------------------|
| <input type="checkbox"/> GASOLINE               | <input type="checkbox"/> DIESEL          | <input type="checkbox"/> WASTE OIL          | <input type="checkbox"/> KEROSENE                      | <input type="checkbox"/> FUEL OIL |
| <input type="checkbox"/> HYDRAULIC OIL          | <input type="checkbox"/> OTHER PETROLEUM | <input checked="" type="checkbox"/> UNKNOWN |                                                        |                                   |
| <input type="checkbox"/> NON-PETROLEUM/CHEMICAL |                                          | (USE MEMO)                                  | <input type="checkbox"/> RELEASED <u>under</u> GALLONS |                                   |
| MONITORING DEVICE IN PLACE                      |                                          | (YES/NO)                                    | MONITORING METHOD                                      |                                   |

**LEAK STATUS**

|                                     |                                  |                                  |
|-------------------------------------|----------------------------------|----------------------------------|
| <input type="checkbox"/> CONTINUING | <input type="checkbox"/> STOPPED | <input type="checkbox"/> UNKNOWN |
|-------------------------------------|----------------------------------|----------------------------------|

**LEAK LOCATION**

|                                       |                                                 |                                        |                                       |
|---------------------------------------|-------------------------------------------------|----------------------------------------|---------------------------------------|
| <input type="checkbox"/> SOIL/SUBSOIL | <input checked="" type="checkbox"/> GROUNDWATER | <input type="checkbox"/> SURFACE WATER | <input type="checkbox"/> WATER SUPPLY |
|---------------------------------------|-------------------------------------------------|----------------------------------------|---------------------------------------|

**RESOURCES THREATENED (ENVIRONMENTAL IMPACT)**

|                                             |                                                 |                                    |                               |
|---------------------------------------------|-------------------------------------------------|------------------------------------|-------------------------------|
| <input type="checkbox"/> MUNICIPAL WELLS    | <input type="checkbox"/> PRIVATE WELLS          | <input type="checkbox"/> LIVESTOCK | <input type="checkbox"/> NONE |
| <input checked="" type="checkbox"/> UNKNOWN | <input type="checkbox"/> OTHER (USE MEMO FIELD) |                                    |                               |

**OFFICIALS ON SITE**

|                                          |                                  |                                           |                                        |
|------------------------------------------|----------------------------------|-------------------------------------------|----------------------------------------|
| <input type="checkbox"/> HEALTH          | <input type="checkbox"/> FIRE    | <input type="checkbox"/> LAW ENFORCEMENT  | <input type="checkbox"/> CIVIL DEFENSE |
| <input checked="" type="checkbox"/> NONE | <input type="checkbox"/> UNKNOWN | <input type="checkbox"/> OTHER (USE MEMO) |                                        |

**SHADED AREAS MUST BE COMPLETED AT THE TIME THE PLR IS INITIATED  
ITALICIZED/DOUBLE UNDERLINED - MANDATORY EPA REPORTABLE ITEM**

**MEMORANDUM**

|                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Emergency done as required by EPCRA for installation of new tanks. Service done work. Report done. Reported safe. UP Report. No soil contamination found. Contaminated Area in 1' layer of soil & 2' depth water. P 610 ppb benzene. |
|                                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                      |

LUST NUMBER

Page 4

## LUST SITE TRACKING

FACILITY NAME

TANK CITY

## LABORATORY ANALYSIS

LAB DUE DATE REQ (YES OR NO) LAB DUE DATE (45 DAYS) / /

CHANGES (N/SEQUENCE #) LAB RECEIVED DATE / /

## SITE ASSESSMENT

SITE ASSESSMENT START DATE / /

CONSULT. DUE DATE REQ (YES/NO) CONSULT. DUE DATE (30 DAYS) / /

CHANGES (N/SEQUENCE #) CONSULT. REC'D DATE / /

SITE ASSESSMENT PLAN DUE DATE REQUIRED (YES OR NO)

PLAN DUE DATE (45 DAYS) / /

CHANGES (N/SEQUENCE #) PLAN RECEIVED DATE / /

PLAN APPR DATE / / FREE PROD LETTER DATE / /

## ASSESSMENT REPORT

REPORT DUE DATE REQ (YES OR NO) REPORT DUE DATE (30 DAYS) / /

CHANGES (N/SEQUENCE #) REPORT RECEIVED DATE / /

RPT. APPR DATE / / SITE ASSES. COMPLETION DATE / /

## CLEANUP

CLEANUP ACHIEVED THROUGH OVEREXCAVATION (YES OR NO)

CLOSE DATE (RELEASE NOT VERIFIED) / /

UNCONTROLLED SITES REFERRAL DATE / /

PLAN DUE DATE (60 DAYS) / / CHANGES (N/SEQUENCE #)

PLAN REC DATE / / PLAN APPR DATE / /

CLEAN UP START DATE / /CLEANUP COMPLET. DATE / /

SHADED AREAS MUST BE COMPLETED AT THE TIME THE PLR IS INITIATED  
ITALICIZED/DOUBLE UNDERLINED - MANDATORY EPA REPORTABLE ITEM

## MEMORANDUM

## LUSTR SITE CONTRACTOR

**TANK CITY**

FIRM NAME

MANAGER NAME

**STREET**

CITY

ST

ZIP

PHONE ( )

## CONTRACTOR

FIRM NAME

MANAGER NAME

# STREET

CITY

ST

**ZIP**

PHONE ( )

**SHADED AREAS MUST BE COMPLETED AT THE TIME THE PLR IS INITIATED**  
**ITALICIZED/DOUBLE UNDERLINED - MANDATORY EPA REPORTABLE ITEM**

# MEMORANDUM

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is a vertical margin line on the left side, creating a narrow left margin. The paper appears to be from a notebook or a standard ruled document.

LUST NUMBER

Page 6

## LUST SITE ADMINISTRATION

|                          |     |           |                 |
|--------------------------|-----|-----------|-----------------|
| FACILITY NAME            |     | TANK CITY |                 |
| GOVERNMENT LIASON BUREAU |     |           |                 |
| REASON (USE MEMO)        |     |           |                 |
| LEG REFER                | / / | Y/N/U     | CHANGES         |
| DIV ADM                  | / / |           | CHANGES         |
| AO ISSUE                 | / / | AG REFER  | / /             |
| AO NUMBER                |     | AG START  | / / CHANGES     |
| AO START                 | / / | CHANGES   | COMPLIANCE DATE |

EPA

|                  |                  |                 |         |
|------------------|------------------|-----------------|---------|
| OWNER ID'D       | (YES OR NO)      | OWNER BROKE     | Y/N/U   |
| RESP PARTY FOUND | (YES OR NO)      | DATE FOUND      | 4/15/92 |
| PRIORITY RANKING | (3 DIGIT NUMBER) | DATE E.R. INIT. | / /     |

## COST RECOVERY

|            |     |                 |     |
|------------|-----|-----------------|-----|
| START DATE | / / | COMPLETION DATE | / / |
|------------|-----|-----------------|-----|

## TRUST FUND MONIES

|                              |                       |
|------------------------------|-----------------------|
| AMT SPENT FOR SUPPORT & MGMT | AMT SPENT FOR CLEANUP |
| AMOUNT SPENT FOR ENFORCEMENT |                       |

## NON-TRUST FUND MONIES

|                              |                       |
|------------------------------|-----------------------|
| AMT SPENT FOR SUPPORT & MGMT | AMT SPENT FOR CLEANUP |
| AMOUNT SPENT FOR ENFORCEMENT |                       |

DATE EMERGENCY RESPONSE INITIATED

/ /

SHADED AREAS MUST BE COMPLETED AT THE TIME THE PLR IS INITIATED  
ITALICIZED/DOUBLE UNDERLINED - MANDATORY EPA REPORTABLE ITEM

## MEMORANDUM

|  |
|--|
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

8LTS84

September 28, 1992

Ms. Becky Schweite  
Iowa Department of Natural Resources  
Underground Storage Tank Section  
Wallace State Office Building  
Des Moines, Iowa 50319

Subject: **Petroleum Contamination**  
**500 E. 59th Street, Davenport**  
**Tank Registration No. 7910056**  
**LUST No. 8LTS84**

Dear Ms. Schweite:

The Marley Pump Company (Marley), located at the above referenced site, is currently conducting a field investigation to meet the requirements of the IAC Chapter 135 by completing a Site Completion Report (SCR).

The SCR was due October 23, 1992, 180 days after receipt of your letter to the Marley Pump Company dated April 23, 1992. Marley has started the site investigation. However, Marley does not anticipate that all the analytical sampling and data compilation will be completed until November 23, 1992. Marley is confident that this deadline can be attained.

If you have any questions regarding this site, please call me at (319) 391-8600 or Denise Story of Metcalf & Eddy, Inc. at (708) 775-0300.

Sincerely,

Richard K. Nelson  
Human Resources Manager  
The Marley Pump Company